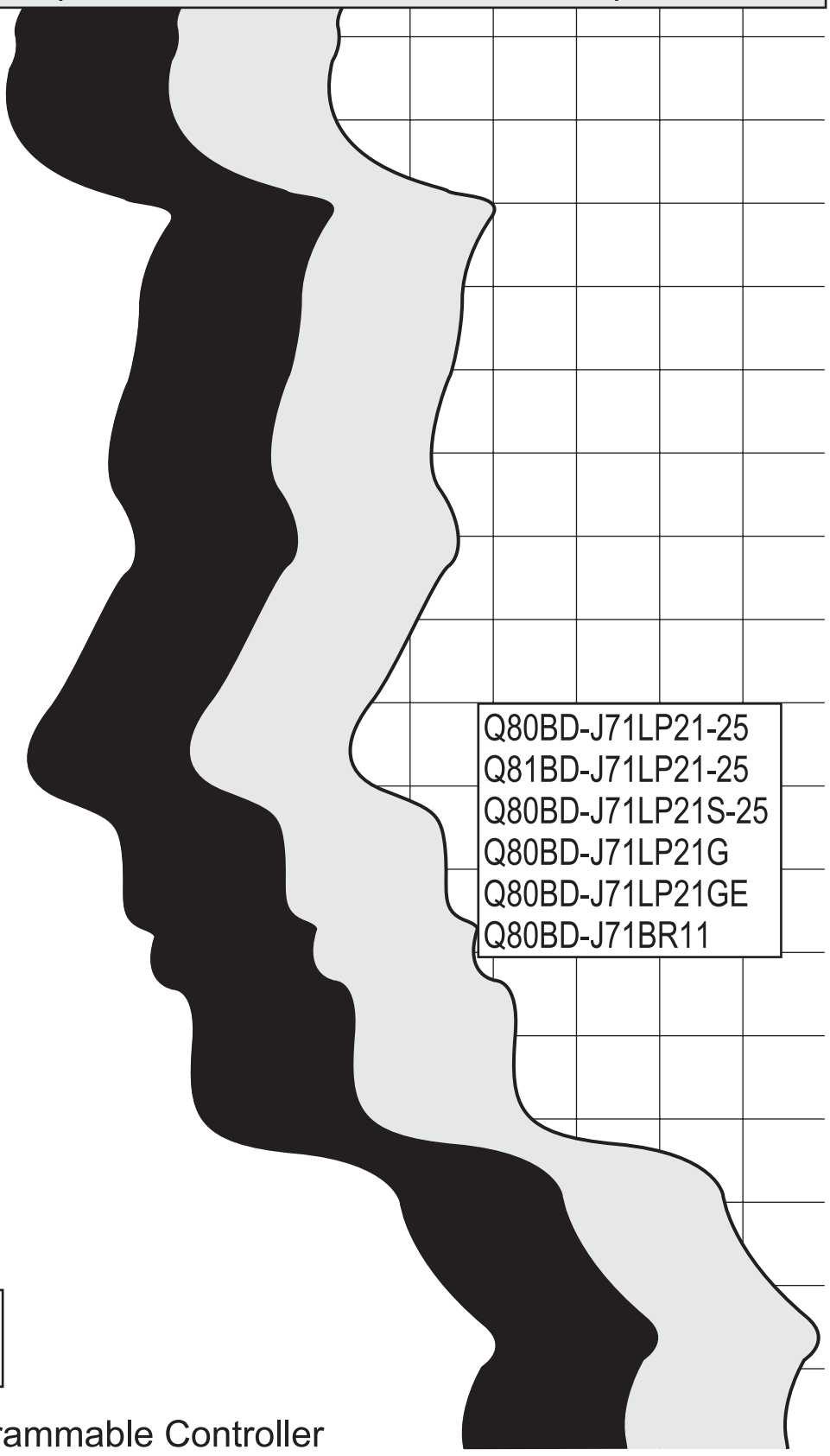
MITSUBISHI

MELSECNET/H Interface Board

User's Manual (For SW0DNC-MNETH-B)



Q80BD-J71LP21-25
Q81BD-J71LP21-25
Q80BD-J71LP21S-25
Q80BD-J71LP21G
Q80BD-J71LP21GE
Q80BD-J71BR11

MELSEC

Mitsubishi Programmable Controller

• SAFETY PRECAUTIONS •

(Be sure to read these instructions before using the product.)

Before using this product, read this manual and the relevant manuals introduced in this manual carefully and handle the product correctly with full attention to safety.
Note that these precautions apply only to this product. Refer to the user's manual of the CPU module for safety precautions on programmable controller systems.
In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".

⚠ DANGER	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that failure to observe the ⚠CAUTION level instructions may also lead to serious results depending on the circumstances.
Be sure to observe the instructions of both levels to ensure personal safety.
Please keep this manual in accessible place and be sure to forward it to the end user.

[Design Instructions]

⚠ DANGER

- Make sure to see this manual for information about each station's operating status when a communication error occurs in the network. Erroneous outputs and malfunctions may result in serious accidents.
- If a coaxial cable is disconnected, this may destabilize the line, and a data link communication error may occur in multiple stations. Make sure to create an interlock circuit in the sequence program so that the system will operate safely even if the above error occurs. Failure to do so may result in a serous accident due to faulty output or malfunctions.
- Provide a safety circuit outside the programmable controller so that the entire system will operate on the safety side even when an error occurs with the personal computer.
  There is a risk of an accident due to faulty output or malfunctioning.
  (1) Construct circuits outside the programmable controller, including an emergency stop circuit, protection circuit, interlock circuit for reciprocal operations such as forward and reverse, and interlock circuit for positioning high and low limits to prevent damage to the equipment.
  (2) If the station in which the MELSECNET/H board (Q80BD-J71LP21-25/Q81BD-J71LP21-25/Q80BD-J71LP21S-25/Q80BD-J71LP21G/Q80BD-J71LP21GE/Q80BD-J71BR11) is installed is disconnected from the data link due to a data link error, the data output from that station and written in other stations will remain the same as immediately before the error occurred in the data link. This data will be retained until the data link for that station is reopened (returned to system).
  Provide a mechanism to monitor the status of data link and handle errors for each station that is connected to the data link system.

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[Design Instructions]

⚠ CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
  They should be installed 100 mm (3.94 inch) or more from each other.
  Not doing so could result in noise that would cause malfunctioning.

[Installation Instructions]

⚠ CAUTION

- Use the MELSECNET/H board in an environment as described in the general specifications listed in this operating manual.
  If the board is used in an environment outside the ranges described in the general specifications, it may result in an electric shock, fire, malfunctioning, damage to or deterioration of the product.
- Be sure to shut off all phases of the external power supply used by the system before installing or removing the MELSECNET/H board. If all power is not turned off, this will result in failure of the MELSECNET/H board or malfunctioning.
- Securely mount the MELSECNET/H board to the PCI bus slot of the mounting device.
  If the MELSECNET/H board is not mounted correctly, this may lead to malfunctioning, failure or cause the board to fall.
- Insert the communication cable securely into the MELSECNET/H board connector. After it has been inserted, check to make sure that it is not being lifted up.
  A faulty connection can lead to faulty input or output.
- When mounting the MELSECNET/H board, take care not to become injured by the components that are installed or surrounding materials.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the MELSECNET/H board.
  Failure to do so may cause a failure or malfunctions of the MELSECNET/H board.

[Wiring Instructions]

⚠ DANGER

- Be sure to shut off all phases of the external power supply used by the system before performing work such as installing the MELSECNET/H board and wiring.
  If all power is not turned off, there is a risk of electric shock or damage to the product.
- When turning on the power and operating the module after having installed the MELSECNET/H board and doing the wiring, always attach the cover for the device module in which the MELSECNET/H board is installed.
  There is a risk of electric shock if the module cover is not attached.

⚠ CAUTION

- Solder the coaxial cable properly.
  If the soldering is incomplete, it may cause the module malfunction.
- For the communication cable, specialized skills and tools are required to connect the plug and cable. The connector plug itself is a custom part.
  When purchasing, consult your local Mitsubishi representative.
  If the connection is incomplete, this can result in a short, fire or malfunction.
- Be sure to fix communication cables connecting to the MELSECNET/H board by placing them in the duct or clamping them.
  Cables not placed in the duct or without clamping may be hang freely and accidentally pulled, which may cause damage to the MELSECNET/H board or cable, or malfunction due to bad cable contacts.
- When removing the cable from the MELSECNET/H board, do not pull the cable.
  Pulling the cable that is still connected to the MELSECNET/H board may cause damage to the MELSECNET/H board or cable, or malfunction due to bad cable contacts.
- Prevent foreign matter such as chips or wiring debris from getting on the MELSECNET/H board.
  Failure to do so can result in fire, breakdowns or malfunction.
- Verify the rated voltage and pin assignment of the product and connect the external power supply cable properly.
  Connecting a power supply with a different voltage rating, imperfect cable crimping or faulty wiring may cause a fire or failure.
- Use a specified tool for crimping of the cable and contacting pin. Imperfect crimping may cause malfunction.
- Verify the pin assignment and fully insert the crimped contacting pin into the connector.
  Imperfect insertion may cause failure or malfunction.
- Insert the wired external power supply cable into the external power supply cable connector until a click is heard. Imperfect insertion may cause failure or malfunction.
- Keep the external power supply cable away from the main circuit cable, power cables and/or load cables connected to other than programmable controllers. Ensure a distance of 100mm (3.94 in.) between them. Failure to do so may result in malfunction due to noise, surge or induction.
- Always ground the personal computer. Failure to do so may cause malfunction.

[Startup/Maintenance Instructions]

⚠ DANGER

- Do not attach or remove the communication cable while the power supply is on.
  This may result in malfunctioning.
- Tighten the board fixing screws after turning off the power supply.
  There is a risk of electric shock if the screws are tightened while power is on.

⚠ CAUTION

- Thoroughly read the operating manual and carefully check to make sure everything is safe before performing operations such as making changes to the program while the module is operating, forced outputs, RUN, STOP and PAUSE.
  Operation errors will result in damage to the equipment or accidents.
- Do not dismantle or rebuild the MELSECNET/H board.
  This will result in breakdowns, malfunctioning, injury or fire.
- Be sure to shut off all phases of the external power supply used by the system before installing or removing the MELSECNET/H board.
  If all power is not turned off, this will result in failure of the MELSECNET/H board or malfunctioning.
- The MELSECNET/H board internal microprocessor reaches very high temperatures when it is running. Do not touch it directly when replacing the MELSECNET/H board.
  This will result in breakdowns, malfunctioning or injury.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the MELSECNET/H board.
  Failure to do so may cause a failure or malfunctions of the MELSECNET/H board.

[Disposal Instructions]

⚠ CAUTION

- When disposing of this product, treat it as industrial waste.

REVISIONS

* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Nov., 2000	SH (NA)-080128-A	First printing
Mar., 2001	SH (NA)-080128-B	Model addition Q80BD-J71LP21G, Q80BD-J71LP21GE Correction Section 1.3, Appendix 3.1
Jun., 2001	SH (NA)-080128-C	Correction About the Generic Terms and Abbreviations, Section 1.2, Section 1.3, Section 2.5, Section 7.1, Section 7.1.1, Section 7.1.2, Section 7.4, Section 8.2.3, Section 9.1.2, Section 9.2, Section 10.3.2, Section 10.4, Appendix 3, Appendix 3.1 Addition Section 10.8, Section 12.2, Chapter 13
Jan., 2002	SH (NA)-080128-D	Correction Section 2.5, Section 3.1, Section 3.2, Section 5.6, Section 9.1.2, Section 10.7, Section 12.2, Section 12.2.2 Addition About the Generic Terms and Abbreviations, Sections 9.1.2, Chapter 13
Dec., 2002	SH (NA)-080128-E	Correction Safety Precautions, Section 8.2.3, Section 8.2.8, Section 8.3.3, Section 9.1.2, Chapter 10, Section 12.2, Appendix 3.1, Appendix 4.1, Appendix 4.2 Addition Precautions for use, Generic Terms and Abbreviations, Section 1.2, Section 1.3, Section 2.5, Section 5.4.2, Section 7.1.1, Section 7.1.2, Section 7.2, Section 7.3, Section 8.1.1, Section 10.3, Chapter 13, Section 14.3, Section 14.3.1, Section 14.5.4, Section 14.6
May, 2004	SH (NA)-080128-F	Correction Safety Precautions, Precautions for use, Section 3.1, Section 3.2, Section 6.3.1, Section 8.2.5, Section 8.2.10, Section 12.2, Section 12.2.1, Section 12.2.2, Section 12.2.3, Section 12.3.3, Chapter 13, Section 14.4.4, Section 14.7, Appendix 5.1 Addition Generic Terms and Abbreviations, Section 1.2, Section 1.3, Section 2.4, Section 2.5, Section 4.2.1, Section 5.2.1, Section 5.3, Section 5.4.3, Chapter 6, Section 6.3.6, Section 8.2.1, Section 8.2.3, Section 10.3, Section 10.3.3, Section 10.3.4, Section 10.8, Section 11.3, Chapter 12, Section 14.4, Section 14.5.5, Section 14.6, Appendix 3

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* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Dec., 2004	SH (NA)-080128-G	Chapter numbers of 5 to 14 were changed to 6 to 15 respectively. Correction Precautions for use, Generic Terms and Abbreviations, Chapter 1, Section 1.1, Section 1.2, Section 1.3, Section 2.1, Section 2.4, Section 2.5, Section 3.2, Chapter 7, Section 7.1, Section 7.2.4, Section 9.2.2, Section 9.2.3, Section 9.2.5, Section 9.2.10, Section 9.2.11, Section 10.1.2, Section 10.2, Section 13.2.1, Section 15.4.3 Addition Section 2.6, Chapter 5, Section 15.7
Jun., 2005	SH (NA)-080128-H	Model addition Q80BD-J71LP21S-25 Correction SAFETY PRECAUTIONS, INTRODUCTION, Generic Terms and Abbreviations, Product List, Section 1.2, Section 2.1, Section 2.5, Section 3.2, Section 4.1, Section 6.1, Section 6.3, Section 6.4, Section 6.5, Section 6.6, Section 7.2.1, Section 8.1.2, Section 9.2.2, Section 9.2.6, Section 9.3.5, Section 11.4, Section 11.6, Section 12.3, Chapter 13, Chapter 14, Section 15.2, Section 15.4.4, Section 15.6, Section 15.7, Section 15.8, Appendix 4, Appendix 5 Addition Section 6.4.4, Section 15.6, Appendix 4, Appendix 6.2
Jul.,2005	SH(NA)-080128-I	Correction Section 2.5, Appendix 6.2
Oct.,2005	SH(NA)-080128-J	Correction Section 2.5, Section 8.1.1, Section 8.1.2, Section 8.3, Section 9.1, Section 15.2
Mar., 2007	SH(NA)-080128-K	Correction Generic Terms and Abbreviations, Section 2.2.4, Section 2.5, Section 6.4.1, Section 6.4.2, Section 8.1.1, Section 8.1.2, Section 10.1.2, Section 10.2, Section 11.2, Section 11.6, Section 11.8, Section 15.4.5 Addition Section 11.3.5, Section 11.3.6, Section 11.7
Oct., 2007	SH(NA)-080128-L	Correction Generic Terms and Abbreviations, Section 1.2, Section 1.3, Section 2.5, Chapter 5, Section 8.1.1, Section 8.3, Section 9.1, Chapter 14, Section 15.2, Section 15.3.1 Section 8.1.2 changed to Section 8.1.3 Addition Section 8.1.2, Appendix 5

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Jan., 2008	SH(NA)-080128-M	Correction Generic Terms and Abbreviations, Section 2.5, Section 6.5.1, Section 6.5.2, Section 6.5.3, Section 6.6.1, Section 6.6.2, Section 8.1.1, Section 8.1.3, Section 10.1.2, Section 10.2, Section 11.6, Section 11.7
May, 2008	SH(NA)-080128-N	Model addition Q81BD-J71LP21-25 Correction SAFETY PRECAUTIONS, Precautions for Use, INTRODUCTION, Generic Terms and Abbreviations, Product List, Section 1.2, Section 1.3, Section 2.1, Section 2.5, Section 3.1, Section 3.2, Section 6.3, Section 6.4.1, Section 6.4.3, Section 6.5.1, Section 6.5.2, Section 6.5.3, Section 6.6.1, Section 6.6.2, Section 8.1.1, Section 8.1.3, Section 8.2, Section 8.3, Section 9.1, Section 9.1.1, Section 9.2.2, Section 9.2.6, Section 10.1.2, Section 11.3, Section 15.2, Section 15.3, Section 15.4.4 Appendix 3 to 6 changed to Appendix 2 to 5 Addition Appendix 5.4 Deletion Appendix 2, Appendix 2.1
Jun., 2008	SH(NA)-080128-O	Correction Section 1.3, Section 2.5, Section 9.2.4, Section 15.4.4, Appendix 4.2
Oct., 2008	SH(NA)-080128-P	Addition Generic Terms and Abbreviations, Section 2.5, Section 10.1.2

Japanese Manual Version SH-080129-P

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Precautions for Use

(1) Transfer function between loops and routing transfers

The MELSECNET/H board cannot be used as a relay station for the transfer function between data links and during routing transfers.

If the transfer function between data links and routing transfers are used, use the network module as a relay station.

(2) Remote I/O Network

The MELSECNET/H board cannot be used in a remote I/O net.

It can be used only in a PLC to PLC network.

(3) Multi-thread Communications

Multi-thread communications cannot be carried out.

(4) Multiprocessor-based personal computers

For details on the compatible operating system and driver software version when using multiprocessor-based personal computers, refer to (2) in Section 2.5.

(5) Compatibility with Hyper-Threading technology

For details on the compatible operating system and driver software version when using the hyper-threading technology on the personal computer, refer to (2) in Section 2.5.

(6) Operating environment of the personal computer used

Refer to Section 2.5 in this manual.

INTRODUCTION

Thank you for purchasing the Q80BD-J71LP21-25/Q81BD-J71LP21-25/Q80BD-J71LP21S-25/Q80BD-J71LP21G/Q80BD-J71LP21GE/Q80BD-J71BR11MELSECNET/H Interface Board.
Please read this manual carefully so that equipment is used to its optimum.

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Manuals

The following table lists the manuals relevant to this product.
You can order them as necessary.

Relevant Manuals

Manual Name	Manual Number (Model Code)
Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) This manual explains the system configuration, performance specification, function, handling, wiring and troubleshooting for MELSECNET/H network system. (Option)	SH-080049 (13JF92)
QnA/A4AR corresponding MELSECNET/10 Network System Reference Manual This manual explains the system configuration, performance specification, function, handling, wiring and troubleshooting for MELSECNET/10 network system. (Option)	IB-66690 (13JF78)
Type A70BDE-J71QLP23/A70BDE-J71QLP23GE/A70BDE-J71QBR13/A70BDE-J71QLR23 MELSECNET/10 Interface Board User's Manual (For SW3DNF-MNET10) This manual explains the system configuration, performance specification, function, handling, wiring and troubleshooting for MELSECNET/10 board. (Option)	IB-0800035 (13JL93)

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"How to Use This Manual" differs depending on the purpose for which the MELSECNET/H board is used. Use this manual with reference to the following contents.

(1) When desiring an overview or to know the features of the MELSECNET/H board (Chapter 1)

Chapter 1 gives an overview of the MELSECNET/H board and its features.

(2) When desiring to know about the system configuration (Chapter 2)

Chapter 2 gives the system configuration.

(3) When desiring to know the specifications of the MELSECNET/H board (Chapter 3)

Chapter 3 gives the specifications of the MELSECNET/H board.

(4) When desiring to know the functions of the MELSECNET/H board (Chapter 4)

Chapter 4 gives the functions of the MELSECNET/H board.

(5) When desiring to know the procedure up to the point of operation of the MELSECNET/H board and settings (Chapter 6)

Chapter 6 gives the procedures up to the point of operation and the settings.

(6) When desiring to know the parameter settings for the MELSECNET/H board (Chapter 7)

Chapter 7 gives the parameter settings.

(7) When desiring to know the procedure for installing and uninstalling the software package (Chapter 8)

Chapter 8 gives the procedure for installing and uninstalling the software package.

(8) When desiring to know the operation of each utility (Chapter 9)

Chapter 9 gives the operation methods for each utility.

(9) When desiring to know the devices which can access the MELSECNET/H board and access ranges (Chapter 10)

Chapter 10 gives the devices which can access the MELSECNET/H board and access ranges.

(10) When desiring to know about the MELSEC Data Link Library (Chapter 11)

Chapter 11 gives details concerning the MELSEC Data Link Library.

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(11) When desiring to know the interlock related signals (Chapter 12)

Chapter 12 gives the interlock related signals.

(12) When desiring to know the application functions (Chapter 13)

Chapter 13 gives the MELSECNET/H board's application functions.

(13) When desiring to know the MELSECNET/H board’s error codes (Chapter 14)

Chapter 14 gives the error codes.

(14) When desiring to know about troubleshooting (Chapter 15)

Chapter 15 gives information on troubleshooting.

(15) When desiring to know how to assign channel No. (Appendix)

The appendix gives channel No. assignment methods for the MELSECNET/H board.

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Generic Terms and Abbreviations

Unless otherwise specified, this manual uses the following generic terms and abbreviations to describe MELSECNET/H interface board.

Generic Term/Abbreviation	Description
Q80BD-J71LP21-25	Abbreviation for Q80BD-J71LP21-25 MELSECNET/H interface board.
Q80BD-J71LP21S-25	Abbreviation for Q80BD-J71LP21S-25 MELSECNET/H interface board.
Q80BD-J71LP21G	Abbreviation for Q80BD-J71LP21G MELSECNET/H interface board.
Q80BD-J71LP21GE	Abbreviation for Q80BD-J71LP21GE MELSECNET/H interface board.
Q80BD-J71BR11	Abbreviation for Q80BD-J71BR11 MELSECNET/H interface board.
Q81BD-J71LP21-25	Abbreviation for Q81BD-J71LP21-25 MELSECNET/H interface board.
MELSECNET/H board	Generic term for Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE, Q80BD-J71BR11.
MNETH utility	Abbreviation for MELSECNET/H utility
Personal computer	PC/AT compatible computer
Windows®	Microsoft® Windows® 95 Operating System (English version), Microsoft® Windows® 98 Operating System (English version), Microsoft® Windows® 98 Second Edition Operating System (English version), Microsoft® Windows NT® Workstation 4.0 Operating System (English version), Microsoft® Windows® 2000 Operating System (English version), Microsoft® Windows® XP Professional Operating System (English version), Microsoft® Windows Vista® Home Basic Operating System (English version), Microsoft® Windows Vista® Home Premium Operating System (English version), Microsoft® Windows Vista® Business Operating System (English version), Microsoft® Windows Vista® Ultimate Operating System (English version), Microsoft® Windows Vista® Enterprise Operating System (English version), Microsoft® Windows Server® 2003 R2 Operating System (English version).
Windows Vista®	Generic term of Microsoft® Windows Vista® Home Basic Operating System, Microsoft® Windows Vista® Home Premium Operating System, Microsoft® Windows Vista® Business Operating System, Microsoft® Windows Vista® Ultimate Operating System and Microsoft® Windows Vista® Enterprise Operating System.
GX Developer	General product name for product model names SWnD5C-GPPW-E, SWnD5C-GPPW-EA, SWnD5C-GPPW-EV, SWnD5C-GPPW-EVA.(n denotes the version number)
MX Links	General product name for product model names SWnD5F-CSKP-E (n denotes the version number)
MX Component	General product name for product model names SWnD5C-ACT-E, SWnD5C-ACT-EA (n denotes the version number)
MELSECNET/10	Abbreviation for A70BDE-J71QLP23/A70BDE-J71QLP23G E/A70BDE-J71QBR13/A70BDE-J71QLR23 MELSECNET/10 interface board.
AnNCPU	Generic term for A0J2HCPU, A1SCPU, A1SCPU-S1, A1SCPUC24-R2, A1SHCPU, A1SJCPU, A1SJCPU-S3, A1SJHCPU, A1NCPU, A2CCPU, A2CCPUC24, A2CCPUC24-PRF, A2CJCPU, A2NCPU, A2NCPU-S1, A2SCPU, A2SCPU-S1, A2SHCPU, A3NCPU, A1FXCPU.
AnACPU	Generic term for A2ACPU, A2ACPU-S1, A2ACPUP21/R21, A2ACPUP21/R21-S1, A3ACPUP21/R21, A3ACPU.
AnUCPU	Generic term for A2UCPU, A2UCPU-S1, A2ASCPU, A2ASCPU-S1, A2ASCPU-S30, A2USHCPU-S1, A3UCPU, A4UCPU.
ACPU	Generic term for AnNCPU, AnACPU, AnUCPU.
QnACPU	Generic term for Q2ACPU, Q2ACPU-S1, Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, Q2ASHCPU-S1, Q3ACPU, Q4ACPU, Q4ARCPU.
QCPU (A mode)	Generic term for Q02CPU-A, Q02HCPU-A and Q06HCPU-A.

Generic Term/Abbreviation	Description
QCPU (Q mode)	Generic term for Q00JCPU, Q00UJCPU, Q00CPU, Q00UCPU, Q01CPU, Q01UCPU, Q02CPU, Q02HCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDEHCPU, Q06HCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q12HCPU, Q12PHCPU, Q12PHCPU, Q12PRHCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q25HCPU, Q25PHCPU, Q25PRHCPU, Q26UDHCPU and Q26UDEHCPU.
Process CPU	Generic term for Q12PHCPU and Q25PHCPU.
Redundant CPU	Generic term for Q12PRHCPU and Q25PRHCPU.
QJ71LP21	Abbreviation for QJ71LP21, QJ71LP21G, Q71LP21GE, QJ71LP21-25, QJ71LP21S-25, MELSECNET/H network module. However, if shown for a particular model, QJ71LP21, QJ71LP21G, Q71LP21GE, QJ71LP21-25, QJ71LP21S-25 is entered.
QJ71BR11	Abbreviation for QJ71BR11 MELSECNET/H network module.
Network module	Generic term for QJ71LP21, QJ71BR11
MELSECNET/H	Abbreviation for Q corresponding MELSECNET/H network system.
MELSECNET/10	AnU corresponding, QnA/Q4AR corresponding MELSECNET/10 network system.
MELSECNET/H (10 Mbps)	Abbreviation in case of using MELSECNET/H board with communication rate of 10 Mbps.
MELSECNET/H (25 Mbps)	Abbreviation in case of using MELSECNET/H board with communication rate of 25 Mbps.
MELSECNET/H mode	Abbreviation in case of using MELSECNET/H board and network module with MELSECNET/H.
MELSECNET/H Extended mode	Abbreviation for the extended MELSECNET/H mode, which is extended in the maximum number of link points per station.
MELSECNET/10 mode	Abbreviation in case of using MELSECNET/H board and network module with MELSECNET/10.

Meaning and Contents of the Terms

This section describes meaning and contents of the terms in this manual.

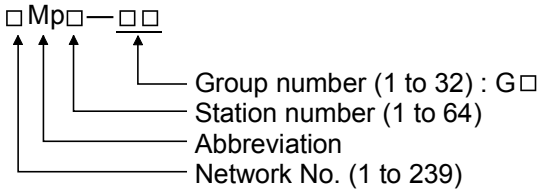
(1) Abbreviations for control station and normal station, and symbol format

This section explains abbreviations for control station and normal station, and symbol format to be used in this manual.

(a) Abbreviation

Abbreviation	Name
MP	Control station
NS	Normal station (Station that can serve as a control station)

(b) Symbol format



[Example]

1) Network No. 3, control station, staiton nmber 6: 3MP6
2) Network No. 5, normal station, staiton nmber 3: 5NS3

Product List

The packing list of the MELSECNET/H board is given below.

Part name	Quantity					
	Q80BD-J71LP21-25	Q81BD-J71LP21-25	Q80BD-J71LP21S-25	Q80BD-J71LP21G	Q80BD-J71LP21GE	Q80BD-J71BR11
Type Q80BD-J71LP21-25 MELSECNET/H Interface Board	1	—	—	—	—	—
Type Q81BD-J71LP21-25 MELSECNET/H Interface Board	—	1	—	—	—	—
Type Q80BD-J71LP21S-25 MELSECNET/H Interface Board	—	—	1	—	—	—
Type Q80BD-J71LP21G MELSECNET/H Interface Board	—	—	—	1	—	—
Type Q80BD-J71LP21GE MELSECNET/H Interface Board	—	—	—	—	1	—
Type Q80BD-J71BR11 MELSECNET/H Interface Board	—	—	—	—	—	1
Connector Set (for External Power Supply Cable)	—	—	1	—	—	—
F-type Connector	—	—	—	—	—	1
MELSECNET/H Interface Board User's Manual (Hardware)	1	1	1	1	1	1
SW0DNC-MNETH-B MELSECNET/H Software Package (CD-ROM)	1	1	1	1	1	1
Software License Agreement	1	1	1	1	1	1
Software Registration Card	1	1	1	1	1	1

MEMO

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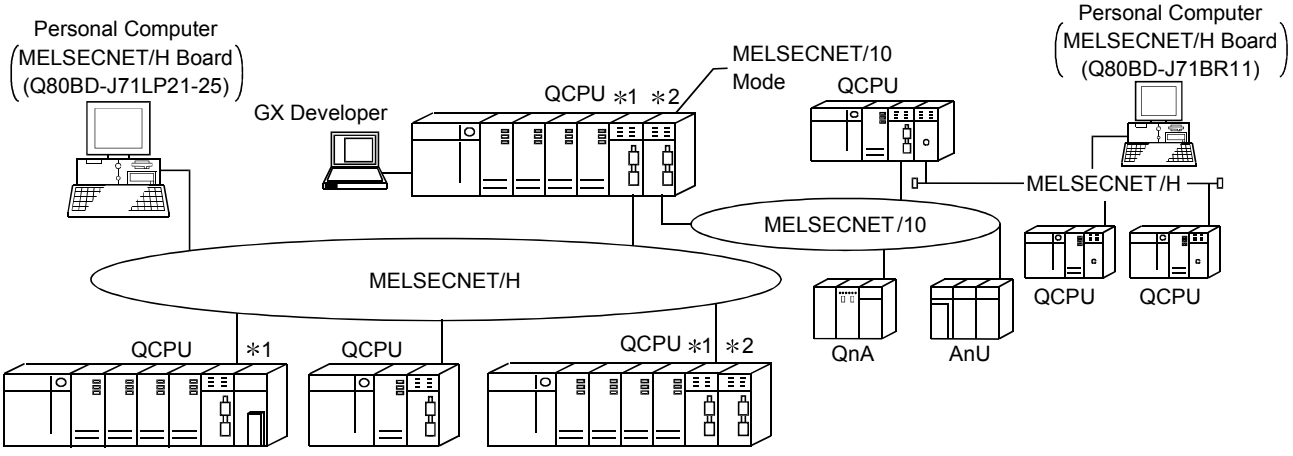
1 OVERVIEW

This is a manual you read when using the MELSCNET/H board in the MELSECNET/H mode or MELSECNET/H Extended mode. When using the MELSCNET/H board in the MELSCNET/H network, refer to "Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)". Also, when using the board in the MELSECNET/10 network system, refer to "For QnA/Q4AR Corresponding MELSECNET/10 network system reference manual".

1.1 Overview

The MELSECNET/H is a network system which is used to connect multiple sequencer modules and personal computers, and is equipped with functions and performance realized in the MELSECNET/10 for general control of a production line.
In the MELSECNET/H, there is a network system which includes an optical loop system (communication rates: 10 Mbps, 25 Mbps) and a coaxial bus system (communications rate: 10 Mbps), enabling large volume communications at high speeds.
Also, in order to improve the performance of the MELSECNET/10 network and achieve upward compatibility, MELSECNET/H supports the MELSECNET/ H and MELSECNET/H Extended modes (high performance, high speed mode) and the MELSECNET/10 Mode (function compatible and performance compatible mode).

Mode	Description
MELSECNET/H mode	Set this mode when all CPUs within the network are QCPUs.
MELSECNET/H Extended mode	The maximum number of link points per station has been increased compared with the MELSECNET/H mode. In excess of 2000 bytes, a maximum of 35840 bytes can be set. Set this mode when the system uses many link points per station.
MELSECNET/10 mode	This mode is used to operate the MELSECNET/H board on a MELSECNET/10 network where the QnA/AnU exists.



∗1: The multiple CPU system compatible network module is for function version B and subsequent products.
∗2: In the multiple CPU system, a network module that becomes a relay station is the same as the control CPU.

1

POINT
(1) For the MELSECNET/H, please select the QCPU (Q Mode) and Q compatible network modules. (2) If the QnACPU or ACPU are included in the same network, select the MELSECNET/10 mode which is compatible with the MELSECNET/10. (3) All of network modules and MELSECNET/H boards within the same network must be set to the same mode (network type)＊1. ＊1: MELSECNET/H mode, MELSECNET/H Extended mode and MELSECNET/10 mode are available.

1.2 Features

The features of the MELSECNET/H board are as shown below.

(1) A personal computer can be incorporated into MELSECNET/H.

By mounting the MELSECNET/H board in a personal computer, the personal computer can be used as a MELSECNET/H or MELSECNET/10 control station or normal station.

Board model name	Mode	Supported network
Q80BD-J71LP21-25 Q81BD-J71LP21-25 Q80BD-J71LP21S-25	MELSECNET/H Mode, MELSECNET/H Extended Mode	MELSECNET/H (10 Mbps / 25 Mbps) Optical Loop System
	MELSECNET/10 Mode	MELSECNET/10 Optical Loop System
Q80BD-J71BR11	MELSECNET/H Mode, MELSECNET/H Extended Mode	MELSECNET/H (10 Mbps) Coaxial Bus System
	MELSECNET/10 Mode	MELSECNET/10 Coaxial Bus System
Q80BD-J71LP21G Q80BD-J71LP21GE	MELSECNET/H Mode, MELSECNET/H Extended Mode	MELSECNET/H (10 Mbps) Optical Loop System
	MELSECNET/10 Mode	MELSECNET/10 Optical Loop System

(2) Through the use of the PCI bus, it is not necessary to carry out troublesome switch settings.

The system can be used simply by installing the MELSECNET/H board in the personal computer, then installing the software.
The channel No., station No. and other settings can be carried out easily in the MNETH Utility.

(3) Compatibility with the previous MELSECNET/10 board's operations is maintained.

(a) Upward compatibility of user programs

The MELSECNET/H board is the same as the previous MELSECNET/10 board when it comes to the maximum number of boards that can be installed in a personal computer (No. of MELSECNET/10 boards and MELSECNET/H boards combined) and the channel No., etc. so you can continue to use your existing MELSECNET/10 boards.

(b) Compatible with the GX Developer, MX Links and MX Component.

It is possible to access the programmable controller CPU using the GX Developer, MX Links and MX Component from a personal computer where the MELSECNET/H board is installed.

(4) Compatible with QCPU (Q Mode) multiple CPU systems.

By using logical station No. station designations in the MNETH utility, it is possible to communicate with each CPU (Q Mode) in a multiple CPU system.

(5) Compatible with redundant CPU systems.

Only by specifying whether the destination is a control or standby station using the user program, access is simply made without considering the current operating system state of the redundant CPU system.

(6) Compatible with MELSECNET/H Extended mode

The MELSECNET/H Extended mode is the extended MELECNET/H mode, which is extended in the maximum number of link points per station. With this mode, the maximum number of link points per station can be set to 2000 bytes or more, i.e., up to 35840 bytes.
This mode is suitable for the system that needs many number of link points per station. However, inapplicable to the redundant CPU system.

(7) Drivers are provided for compatibility with each OS.

Each type of driver is provided, so it is easy to build a system that is compatible with the user environment.
Compatible OS:
Microsoft® Windows® 95 Operating System (English Version) *1
Microsoft® Windows® 98 Operating System (English Version) *1
Microsoft® Windows NT® Workstation Operating System Version 4.0 (English Version) *1
Microsoft® Windows® 2000 Professional Operating System (English Version)
Microsoft® Windows® XP Professional Operating System (English Version)
Microsoft® Windows Vista® Home Basic Operating System (English Version)
Microsoft® Windows Vista® Home Premium Operating System (English Version)
Microsoft® Windows Vista® Business Operating System (English Version)
Microsoft® Windows Vista® Ultimate Operating System (English Version)
Microsoft® Windows Vista® Enterprise Operating System (English Version)
Microsoft® Windows Server® 2003 R2 Operating System (English Version)

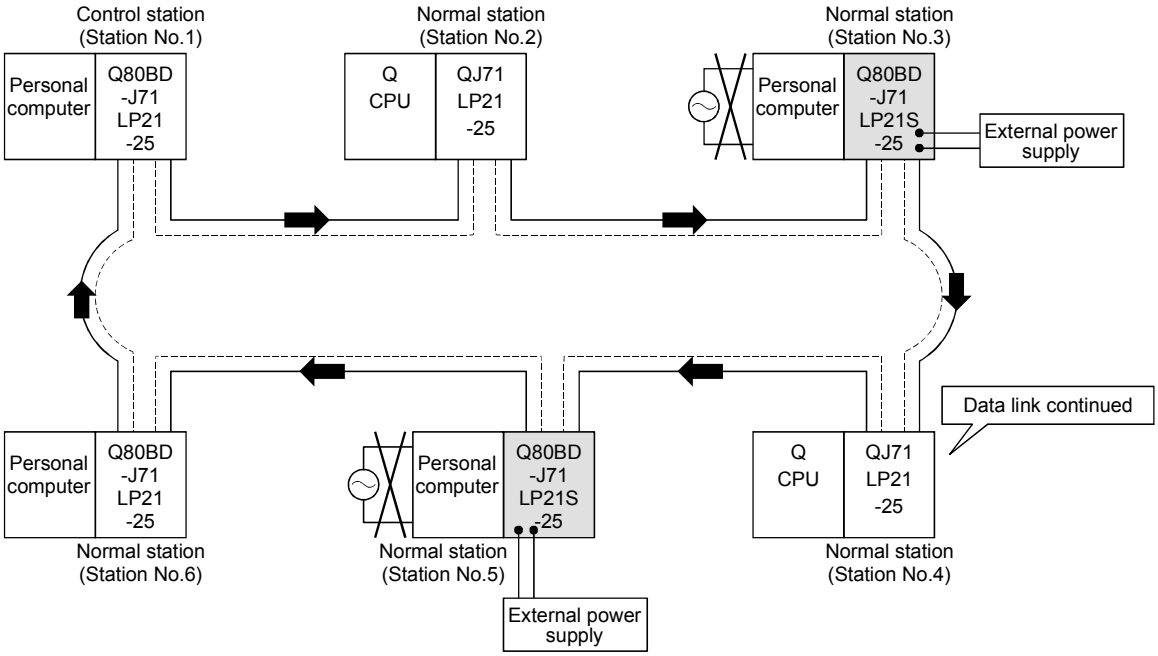
*1: The Q81BD-J71LP21-25 is not compatible.

(8) User programming functions are provided.

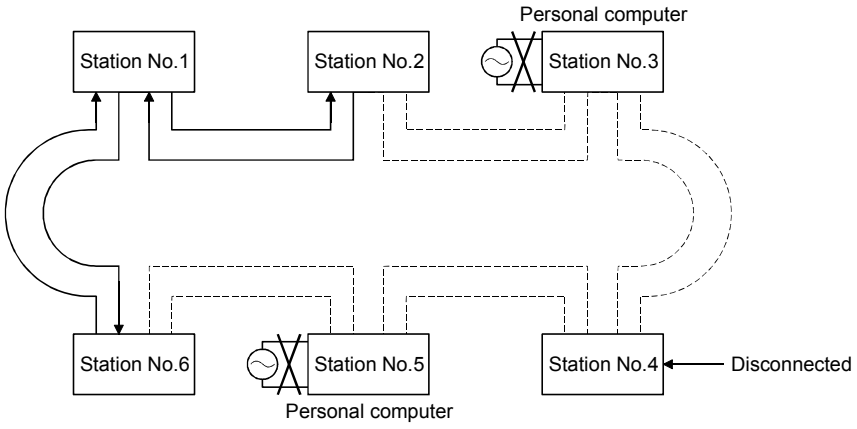
Through Microsoft® Visual Basic® and Microsoft® Visual C++® compatible functions, it is possible to carry out remote control of a programmable controller CPU or read and write to devices, and user programs can be created easily.

(9) External power supply allows continuous network communication even during power-off of personal computer. (Function of the Q80BD-J71LP21S-25)

Since power is supplied externally, the Q80BD-J71LP21S-25 can continue network communication (baton passing) even if a personal computer is powered off and data link cannot be performed.
Therefore, a normally operating station connected between other stations with power-off computers will not be disconnected from the data link.
Another advantage is that the link scan time is stabilized since loopback can be also prevented.



When station No. 3 and No.5 use MELSECNET/H boards without the external power supply function and if their personal computers are powered off, station No.4 is cut off from the network as well as No.3 and No.5.



1.3 Combinations of Boards with Existing Software

This section describes the combinations of boards with existing software.

(1) When using the MELSECNET/H board(Q80BD-J71LP21-25/ Q80BD-J71LP21S-25/ Q80BD-J71BR11/ Q80BD-J71LP21G/ Q80BD-J71LP21GE) and other interface boards in the same PC

Board model name	Software package name	Supported OS										
		DOS	NT 3.51	Win 95	Win 98	Win Me	NT 4.0	Win 2000	XP Pro	XP Home	Server 2003 *7	Vista *6
A70BDE-J71QLP23	SW0IVDWT-MNET10P	○	○	×	×	×	×	×	×	×	×	×
A70BDE-J71QLP23GE	SW2DNF-MNET10	○	×	○	○	×	○	×	×	×	×	×
A70BDE-J71QBR13	SW3DNF-MNET10	○	×	○	○	×	○	×	×	×	×	×
A70BDE-J71QLR23	SW3DNF-MNET10	○	×	○	○	×	○	×	×	×	×	×
A80BDE-J61BT13	SW0DNF-CCLINK	×	×	×	×	×	○ *1	×	×	×	×	×
	SW1DNF-CCLINK	×	×	○	×	×	○ *1	×	×	×	×	×
	SW2DNF-CCLINK	×	×	○	○	×	○	×	×	×	×	×
	SW3DNF-CCLINK	×	×	○	○	×	○	×	×	×	×	×
	SW4DNF-CCLINK-B	×	×	○	○	×	○	○	○ *2	×	×	×
A80BDE-J61BT11	SW3DNF-CCLINK	×	×	○	○	×	○	×	×	×	×	×
	SW4DNF-CCLINK-B	×	×	○	○	×	○	○	○ *2	×	×	×
A80BDE-A2USH-S1	SW0DNF-ANU	×	×	○	○	×	○	×	×	×	×	×
	SW0DNF-ANU-B	×	×	○	○	×	○	×	×	×	×	×
	SW1DNF-ANU-B	×	×	○	○	×	○	○	×	×	×	×
Q80BD-J61BT11N Q81BD-J61BT11	SW1DNC-CCBD8-B	×	×	×	×	×	○	○	○	×	○ *5	○ *3
Q81BD-J71LP21-25	SW0DNC-MNETH-B	×	×	×	×	×	×	○	○	○	○	○
Q80BD-J71GP21-SX Q80BD-J71GP21S-SX	SW1DNC-MNETG-B	×	×	×	×	×	×	○	○	×	○	○ *4

DOS : MS-DOS 6.2 NT 3.51 : Windows NT® Workstation 3.51 Win 95 : Windows® 95 Win 98 : Windows® 98
Win Me : Windows® Me NT 4.0 : Windows NT® Workstation 4.0 Win 2000 : Windows® 2000Professional
XP Pro: Windows® XP Professional XP Home : Windows® XP Home Edition
Server 2003: Windows Server® 2003 R2 Vista : Windows Vista®

○ : Can be operated simultaneously. × : Cannot be operated simultaneously.

indicates an OS that is not supported by the MELSECNET/H board. It cannot be used on the same PC.

*1 : Update the version of each software if it is used with the MELSECNET/H board on the same PC.
For details on version update products, contact your local Mitsubishi service center or representative.
*2 : Version 40E or later supports Windows® XP Professional.
*3 : Version 1.04E or later supports Windows Vista® .
*4 : Version 1.02C or later supports Windows Vista® .
*5 : Version 1.06G or later supports Windows Server® 2003 R2.
*6 : Version 17T or later supports Windows Vista®
*7 : Version 19V or later supports Windows Server® 2003 R2.

(2) When using the MELSECNET/H board(Q81BD-J71LP21-25) and other interface boards in the same PC

Board model name	Software package name	Supported OS				
		Win 2000	XP Pro	XP Home	Server 2003 ∗6	Vista ∗4
Q80BD-J71GP21-SX Q80BD-J71GP21S-SX	SW1DNC-MNETG-B	○	○	○	○	○
Q80BD-J71LP21-25	SW0DNC-MNETH	○	—	—	○	○
Q80BD-J71BR11	SW0DNC-MNETH-B	○	○ ∗1	—	○	○
Q80BD-J71LP21G	SW0DNC-MNETH-B	○	○ ∗1	—	○	○
Q80BD-J71LP21S-25	SW0DNC-MNETH-B	○	○ ∗1	—	○	○
Q80BD-J61BT11N ∗2 Q81BD-J61BT11	SW1DNC-CCBD2-B	○	○	○	○ ∗5	○
A80BD-J61BT11 ∗2	SW(0~3)DNF-CCLINK	—	—	—	—	—
A80BD-J61BT13 ∗2	SW4DNF-CCLINK-B	○	○ ∗3	—	—	—
A80BD-A2USH-S1	SW0DNF-ANU	—	—	—	—	—
	SW0DNF-ANU-B	—	—	—	—	—
	SW1DNF-ANU-B	○	—	—	—	—

Win 2000 : Windows® 2000 Professional XP Pro : Windows® XP Professional XP Home : Windows® XP Home Edition
Server 2003 : Windows Server® 2003 R2 Vista : Windows Vista®

○ : Can be operated simultaneously. × : Cannot be operated simultaneously. — : No combination available

∗1 : The user program EXE file that was generated using MDFUNC32.LIB must be re-linked using the MDFUNC32.LIB that comes with SW0DNC-MNETH-B.
∗2 : Update the version of each software if it is used with the MELSECNET/H board on the same PC. For details on version update products, contact your local Mitsubishi service center or representative.
∗3 : Version 40E or later supports Windows® XP Professional.
∗4 : Version 17T or later supports Windows Vista® .
∗5 : Version 1.06G or later supports Windows Server® 2003 R2.
∗6 : Version 19V or later supports Windows Server® 2003 R2.

(3) When using the MELSECNET/H board (Q80BD-J71LP21-25/ Q80BD-J71LP21S-25/ Q80BD-J71BR11/ Q80BD-J71LP21G, Q80BD-J71LP21GE),Communication Support Software Tool and GX Developer in the same PC

Software name	Software package name	Supported OS										
		DOS	NT 3.51	Win 95	Win 98	Win Me	NT 4.0	Win 2000	XP Pro	XP Home	Server 2003	Vista ＊8
Communication Support Software Tool ＊2	SW1D5F-CSKP-E	×	×	△ ＊1	△ ＊1	×	△ ＊1	×	×	×	×	×
	SW1D5F-CSKP-E	×	×	△ ＊1	△ ＊1	×	△ ＊1	×	×	×	×	×
	SW1D5F-OLEX-E	×	×	△ ＊1	△ ＊1	×	△ ＊1	×	×	×	×	×
	SW1D5F-XMOP-E	×	×	△ ＊1	△ ＊1	×	△ ＊1	×	×	×	×	×
	SW3D5F-CSKP-E	×	×	○	○	×	○	×	×	×	×	×
	SW3D5F-OLEX-E	×	×	○	○	×	○	×	×	×	×	×
	SW3D5F-XMOP-E	×	×	○	○	×	○	×	×	×	×	×
	SW0D5C-ACT-E	×	×	△	△	×	△	×	×	×	×	×
	SW2D5C-ACT-E	×	×	○	○	○	○	○	×	×	×	×
	SW3D5C-ACT-E	×	×	○	○	○	○	○	○	○	×	○ ＊4
	SW1D5C-SHEET-E	×	×	×	○	○	○	○	○	○	×	○ ＊5
GX Developer	SW1D5F-GPPW-E/ SW1D5C-GPPW-E	×	×	△	△ ＊3	×	△	×	×	×	×	×
	SW3D5F-GPPW-E/ SW3D5C-GPPW-E	×	×	△	△	×	△	×	×	×	×	×
	SW4D5C-GPPW-E	×	×	△	○	×	△	×	×	×	×	×
	SW5D5C-GPPW-E	×	×	△	△	×	△	×	×	×	×	×
	SW6D5C-GPPW-E	×	×	○	○	×	○	×	×	×	×	×
	SW7D5C-GPPW-E	×	×	○	○	○	○	○	×	×	×	×
	SW8D5C-GPPW-E	×	×	○	○	○	○	○	○	○	×	×
GT Designer2 Version2	SW2D5C-GTD2-E ＊6	×	×	×	×	○	○	○	○	○	×	○ ＊7

DOS : MS-DOS 6.2 NT 3.51 : Windows NT® Workstation 3.51 Win 95 : Windows® 95 Win 98 : Windows® 98
Win Me : Windows® Me NT 4.0 : Windows NT® Workstation 4.0 Win 2000 : Windows® 2000Professional
XP Pro: Windows® XP Professional XP Home : Windows® XP Home Edition
Server 2003: Windows Server® 2003 R2 Vista : Windows Vista®

○ : Can be operated simultaneously. × : Cannot be operated simultaneously.
△ : Cannot access the MELSECNET/H board, and cannot access other stations via the MELSECNET/H board.

indicates an OS that is not supported by the MELSECNET/H board. It cannot be used on the same PC.

＊1 : Update the version of each software if it is used with the MELSECNET/H board on the same PC.
For details on version update products, contact your nearest Mitsubishi dealer.

＊2 : There may be some restrictions on the use of the MELSECNET/H board in each package.

＊3 : Version 30D or later supports Windows® 98.

＊4 : Version 3.09K or later supports Windows Vista® .

＊5 : Version 1.08J or later supports Windows Vista® .

＊6 : Version 2.69X or a later version is required.

＊7 : Version 2.72A or later supports Windows Vista® .

＊8 : Version 17T or later supports Windows Vista® .

(4) When using the MELSECNET/H board (Q81BD-J71LP21-25), Communication Support Software Tool and GX Developer in the same PC

Software name	Software package name	Supported OS										
		DOS	NT 3.51	Win 95	Win 98	Win Me	NT 4.0	Win 2000	XP Pro	XP Home	Server 2003	Vista *8
Communication Support Software Tool *2	SW1D5F-CSKP-E	×	×	△ *1	△ *1	×	△ *1	×	×	×	×	×
	SW1D5F-OLEX-E	×	×	△ *1	△ *1	×	△ *1	×	×	×	×	×
	SW1D5F-XMOP-E	×	×	△ *1	△ *1	×	△ *1	×	×	×	×	×
	SW3D5F-CSKP-E	×	×	○	○	×	○	×	×	×	×	×
	SW3D5F-OLEX-E	×	×	○	○	×	○	×	×	×	×	×
	SW3D5F-XMOP-E	×	×	○	○	×	○	×	×	×	×	×
	SW0D5C-ACT-E	×	×	△	△	×	△	×	×	×	×	×
	SW2D5C-ACT-E	×	×	○	○	○	○	○	×	×	×	×
	SW3D5C-ACT-E	×	×	○	○	○	○	○	○	○	×	○ *4
	SW1D5C-SHEET-E	×	×	×	○	○	○	○	○	○	×	○ *5
GX Developer	SW1D5F-GPPW-E/ SW1D5C-GPPW-E	×	×	△	△ *3	×	△	×	×	×	×	×
	SW3D5F-GPPW-E/ SW3D5C-GPPW-E	×	×	△	△	×	△	×	×	×	×	×
	SW4D5C-GPPW-E	×	×	△	○	×	△	×	×	×	×	×
	SW5D5C-GPPW-E	×	×	△	△	×	△	×	×	×	×	×
	SW6D5C-GPPW-E	×	×	○	○	×	○	×	×	×	×	×
	SW7D5C-GPPW-E	×	×	○	○	○	○	○	×	×	×	×
	SW8D5C-GPPW-E	×	×	○	○	○	○	○	○	○	×	×
GT Designer2 Version2	SW2D5C-GTD2-E *6	×	×	×	×	○	○	○	○	○	×	○ *7

DOS : MS-DOS 6.2 NT 3.51 : Windows NT® Workstation 3.51 Win 95 : Windows® 95 Win 98 : Windows® 98
Win Me : Windows® Me NT 4.0 : Windows NT® Workstation 4.0 Win 2000 : Windows® 2000Professional
XP Pro: Windows® XP Professional XP Home : Windows® XP Home Edition
Server 2003: Windows Server® 2003 R2 Vista : Windows Vista®

○ : Can be operated simultaneously. × : Cannot be operated simultaneously.
△ : Cannot access the MELSECNET/H board, and cannot access other stations via the MELSECNET/H board.

indicates an OS that is not supported by the MELSECNET/H board. It cannot be used on the same PC.

*1 : Update the version of each software if it is used with the MELSECNET/H board on the same PC.
For details on version update products, contact your nearest Mitsubishi dealer.

*2 : There may be some restrictions on the use of the MELSECNET/H board in each package.

*3 : Version 30D or later supports Windows® 98.

*4 : Version 3.09K or later supports Windows Vista® .

*5 : Version 1.08J or later supports Windows Vista® .

*6 : Version 2.69X or a later version is required.

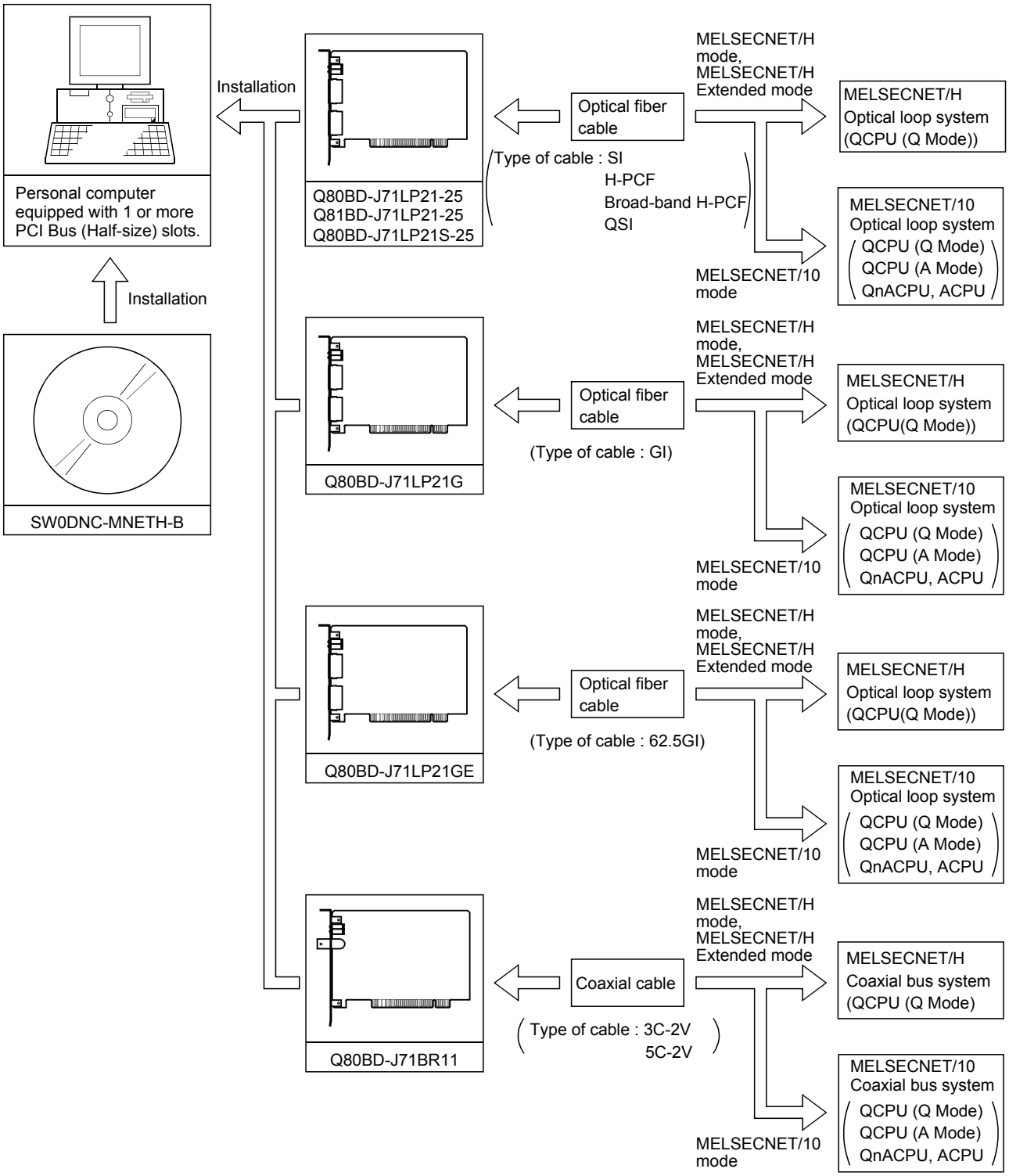
*7 : Version 2.72A or later supports Windows Vista® .

*8 : Version 17T or later supports Windows Vista® .

2 SYSTEM CONFIGURATION

2.1 MELSECNET/H Board System Configuration

The system configuration when the MELSECNET/H board is mounted to a personal computer is shown below.



POINT

(1) When using the MELSECNET/H Extended mode
   (a) Use the MELSECNET/H board of ROM version 2X or later and SW0DNC-MNETH-B version 11M or later.
   (b) When assigning 2000 bytes or more to the number of link points sent by a station, set all stations including control stations and normal stations to the MELSECNET/H Extended mode.
(2) When using the Q80BD-J71LP21S-25
   Use the SW0DNC-MNETH-B version 12N or later.
(3) When using the Q80BD-J71LP21-25, Q81BD-J71LP21-25 or Q80BD-J71LP21S-25 at a communication speed of 25Mbps, errors may occur at all stations if multiple boards with the same network number are installed, or the operating systems are started up/shut down or the boards are reset simultaneously on the adjacent personal computers. In this case, set the communication speed to 10Mbps.

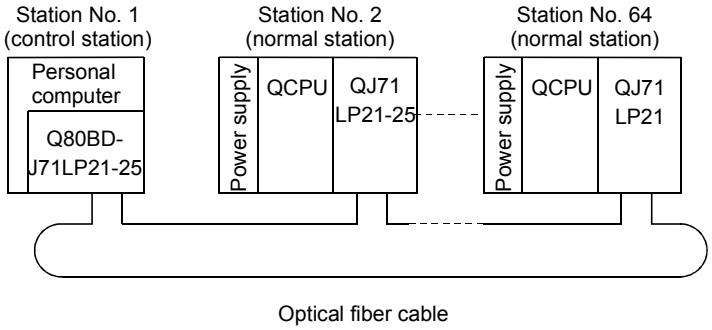
2 - 2

2.2 Single Network System

A single network system is one system that connects the control station and the normal stations with an optical fiber cable or a coaxial cable.

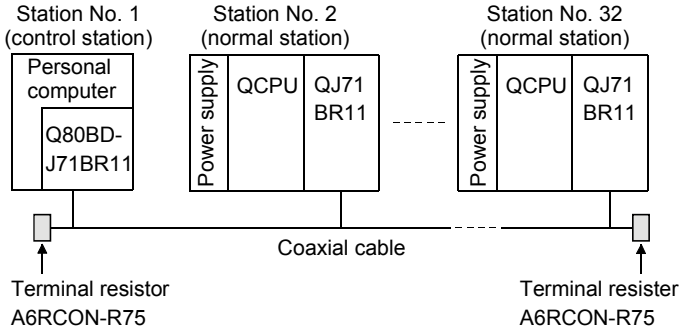
2.2.1 Optical loop system

In the optical loop system, 1 control station and 63 normal stations (a total of 64 stations) can be connected. Any station number can be assigned as the control station. However, only one station can be set as the control station per system.
In the following sample system, station number 1 has been assigned as the control station.



2.2.2 Coaxial bus system

In the coaxial bus system, 1 control station and 31 normal stations (a total of 32 stations) can be connected. As in the optical loop system, any station number can be assigned as the control station. However, only 1 station can be assigned as the control station per system.



2.2.3 Setting items

In a single network system, the items which need to be set in the case that the MELSECNET/H board is used as the control station or normal station are as follows. MELSECNET/H board settings are set by the MNETH Utility.

Setting item		Control station	Normal station	Reference section
Channel setting		△	△	Section 9.2.2
Network No.		○	○	Section 9.2.3
Group No.		△	△	
Station No.		○	○	
Control station/ Normal station		○	○	
Mode Setting		○	○	
Routing parameter setting		×	×	Section 9.2.4
Common parameter setting	B, W setting	○	×	Section 9.2.5
	X, Y setting	○	×	
	Reserved station setting	○	×	
	Supplementary setting	△	×	
Opposite party setting (Logical station No.)		△	△	Section 9.2.10
Driver setting		△	△	Section 9.2.11

○: Setting necessary △: Set as necessary ×: Setting unnecessary

2.2.4 Usable device ranges

The MELSECNET/H board ca be used within the following device ranges for the following devices on the MELSECNET/H board.

Device	Usable range	
LB	0_H to $3FFF_H$ (16384 points)	The function expansion areas of 2000_H to $3FFF_H$ are used for the low-speed cyclic transmission. All areas can be used for the normal cyclic transmission. The use ranges for each MELSECNET/H board and network module need to be assigned in the parameter settings for the control station.
LW	0_H to $3FFF_H$ (16384 points)	
LX	0_H to $1FFF_H$ (8192 points)	The use ranges for each MELSECNET/H board and network module need to be assigned in the parameter settings for the control station.
LY	0_H to $1FFF_H$ (8192 points)	

If the MELSECNET/H board is used in the MELSECNET/10 mode, the device range for LB/LW becomes 0_H to $1FFF_H$ (8192 points).

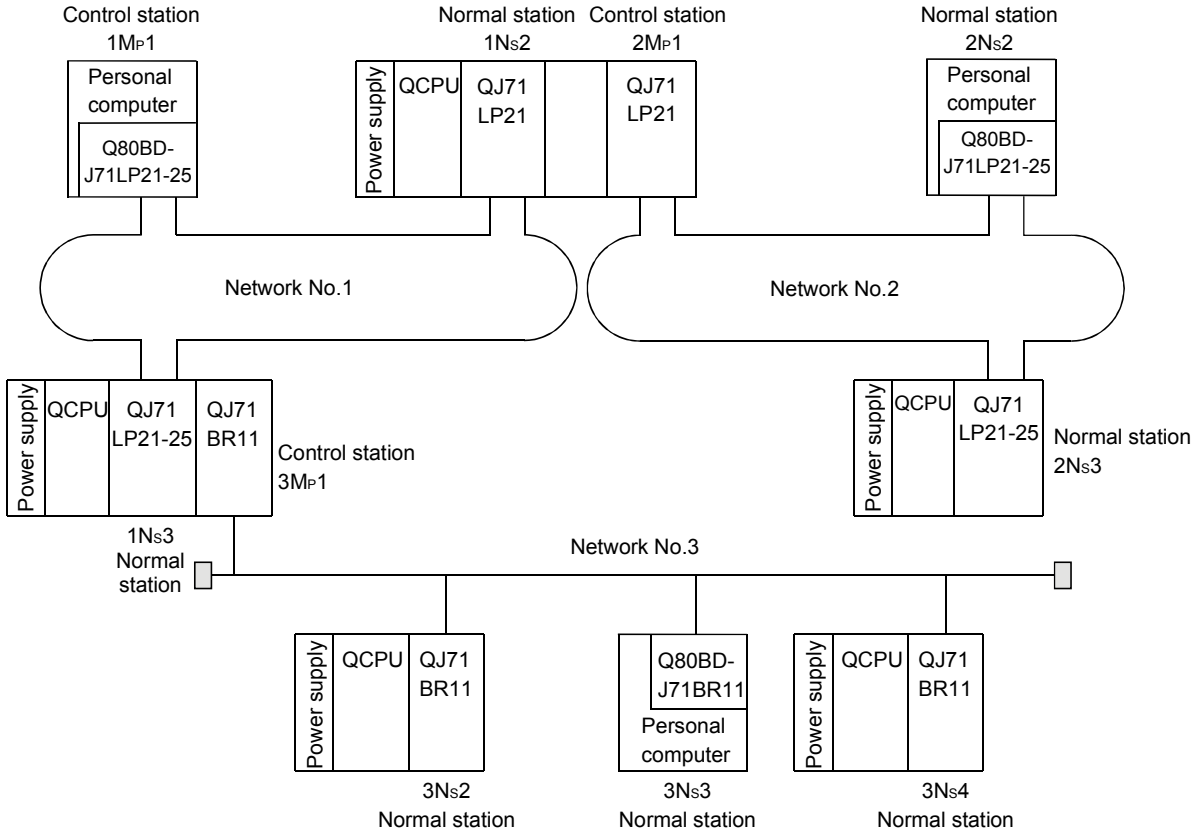
2.3 Multiple Network System

A multiple network system is a system where multiple networks are connected by relay stations.

POINT
(1) The network No. can be set at any desired No. in the range 1 to 239.
(2) The MELSECNET/H board cannot be used as a relay station. Please use the network module as a relay station.

2.3.1 Configuration

The following example shows how three networks can be connected.



2.3.2 Setting items

Setting items in the case that the MELSECNET/H board is used as a control station or normal station in a multiple network system are explained below.
MELSECNET/H board settings are performed by the MNETH Utility.

Setting item		Control station	Normal station	Reference section
Channel setting		△	△	Section 9.2.2
Network No.		○	○	Section 9.2.3
Group No.		△	△	
Station No.		○	○	
Control station/ Normal station		○	○	
Mode setting		○	○	
Routing parameter setting		△	△	Section 9.2.4
Common Parameter Setting	B, W setting	○	×	Section 9.2.5
	X, Y setting	○	×	
	Reserved station setting	○	×	
	Supplementary setting	△	×	
Opposite party setting (Logical station No.)		△	△	Section 9.2.10
Driver setting		△	△	Section 9.2.11

2.3.3 Usable device range

The same device range as is used for a single network system (section 2.2.3) can be used.

2.4 If used in a Multiple CPU System or Redundant CPU System

For cautions in the case of installing MELSECNET/H in a multiple CPU system or redundant CPU system, see "Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)."

POINT

When accessing a multiple CPU system or Redundant CPU system, use the MELSECNET/H board and network module of the following function versions.

	MELSECNET/H board	Programmable controller side network module
Access to multiple CPU system	All versions available	Function version B or later
Access to Redundant CPU system, ＊2	Function version D or later ＊1	Function version D or later

＊1: When using a MELSECNET/H board of function version D or earlier, access to a redundant CPU is not performed normally.
＊2: In the redundant CPU system, the MELSECNET/H Extended mode cannot be used.

2.5 Operating Environment

The following table shows the operating environment for the MELSECNET/H board.

Item		Description
Personal computer	CPU Required memory	Personal computer (including FC98-NX®) with one or more PCI bus slots, which meets the specifications in "Applicable operating system and the corresponding required PC performance" shown on the next page ＊1, ＊2, ＊3.
	PCI bus specifications	5V DC, 32-bit bus, Basic clock : 33MHz, Compliant with PCI standard Rev.2.2
	PCI Express Bus specifications	3.3 V DC, Link width : 1lane, Basic clock : 100MHz, Compliant with PCI Express standard Rev.1.0a
Operating system ＊4, ＊5, ＊6, ＊11		Microsoft® Windows® 95 Operating System (English version) ＊12 Microsoft® Windows® 98 Operating System (English version) ＊12 Microsoft® Windows NT® Workstation Operating System Version 4.0 (English version) ＊7, ＊8, ＊12 Microsoft® Windows® 2000 Professional Operating System (English version) ＊7 Microsoft® Windows® XP Professional Operating System (English version) ＊7 Microsoft® Windows Server® 2003 R2 Operating System (English version) Microsoft® Windows Vista® Home Basic Operating System (English version) ＊7 Microsoft® Windows Vista® Home Premium Operating System (English version) ＊7 Microsoft® Windows Vista® Business Operating System (English version) ＊7 Microsoft® Windows Vista® Ultimate Operating System (English version) ＊7 Microsoft® Windows Vista® Enterprise Operating System (English version) ＊7
Display		Resolution: 800×600 dot or higher (Recommended: 1024×768 dot) ＊9
Available hard disk space		80MB or more
Disk drive		CD-ROM disk drive
Programming language ＊10, ＊11		Microsoft® Visual Basic® 5.0 (English version), Microsoft® Visual Basic® 6.0 (English version), Microsoft® Visual Basic® .NET 2003 (English version), Microsoft® Visual Studio 2005 Visual Basic® (English version), Microsoft® Visual C++® 5.0 (English version), Microsoft® Visual C++® 6.0 (English version), Microsoft® Visual C++® .NET 2003 (English version), Microsoft® Visual Studio 2005 Visual C++® (English version)

＊1: For details on the compatible operating system and driver software version when using multiprocessor-based personal computers, refer to (2) in Section 2.5.

＊2: Personal computers that conform to the PCI Express standard for the Q81BD-J71LP21-25 and the PCI standard for Q80BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G , Q80BD-J71LP21GE and Q80BD-J71BR11 can be used.
Using a personal computer not compliant with the standard may result in a problem due to a bad electrical contact, erroneous operation or any other failures.

＊3: For the Q80BD-J71LP21S-25, 2 slots are required for one PCI bus.

＊4: The MELSECNET/H board does not support the Standby (Hibernate) mode of the operating system.
The Standby (Hibernate) mode may be preset to some personal computers so that it will be activated by pressing the Power switch or by the UPS (Uninterruptible Power Supply system) setting.
For Windows® 2000 Professional, select [Settings] – [Control Panel] – [Power Options] and disable the Standby mode setting.

＊5: When exiting the operating system, always shut down the computer.

＊6: For details on the compatible operating system and driver software version when using the hyper-threading technology on the personal computer, refer to (2) in Section 2.5.
When using the personal computer that includes the hyper-threading technology and Windows® 95, Windows® 98, Windows NT® Workstation 4.0 or Windows® 2000 Professional, make sure to disable the function in the BIOS settings of the personal computer.

＊7: Installation, uninstallation and usage of utilities are available only by the administrator's authority.

*8: Service Pack3 or higher is required when using Windows NT® Workstation 4.0.
*9: This product does not comply with large-sized fonts when Windows® 2000 Professional or Windows® XP Professional is used.
*10: User programs created in the English environment work only in the English environment.
*11: For the combination of operating system and programming language, refer to the Microsoft technical information.
*12: The Q81BD-J71LP21-25 is not compatible with the Microsoft® Windows® 95 Operating System, Microsoft® Windows® 98 Operating System or Microsoft® Windows NT® Workstation Operating System Version 4.0.

(1) Applicable operating system and the corresponding required PC performance

Operating system	Description	
	CPU	Required memory
Windows® 95	Pentium® 133MHz or higher	32MB or more
Windows® 98	Pentium® 133MHz or higher	32MB or more
Windows NT® Workstation 4.0	Pentium® 133MHz or higher	32MB or more
Windows® 2000 Professional	Pentium® 133MHz or higher	64MB or more
Windows® XP Professional	Pentium® 300MHz or higher	128MB or more
Windows Server® 2003 R2	Pentium® 550MHz or higher	256MB or more
Windows Vista®	800MHz or higher	512MB or more

(2) Applicable driver versions and functions for the operating systems

Operating system	SW0DNC-MNETH-B		64-bit operating system	Hyper-threading technology	Multiprocessor-based personal computer
	Q80BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE, Q80BD-J71BR11	Q81BD-J71LP21-25			
Windows® 95	All versions	×		×	×
Windows® 98	All versions	×		×	×
Windows NT® Workstation 4.0	All versions	×		×	×
Windows® 2000 Professional	All versions	Version 19V or later		×	Version 19V or later
Windows® XP Professional	Version 70H or later	Version 19V or later	×	Version 11M or later	Version 19V or later
Windows Server® 2003 R2	Version 19V or later		×	Version 19V or later	Version 19V or later
Windows Vista®	Version 17T or later	Version 19V or later	×	Version 17T or later	Version 19V or later

×: Not applicable

POINT

- Instruction for use of the PDF data
  Use with addition of personal computer memory ensures comfortable operation.
- Note the following when using Windows® XP.
  The following functions cannot be used. If any of the following functions is used, this product may not operate normally.
  Start of application in Windows® compatible mode
  Fast user switching
  Remote desktop
- Note the following when using Windows Vista® .

1) The following is not supported.
   Other than the default scale of 96DPI
   Operating system sleep mode
2) The following functions cannot be used. If any of the following functions is used, this product may not operate normally.
   Start of application in Windows® compatible mode
   Fast user switching
   Remote desktop

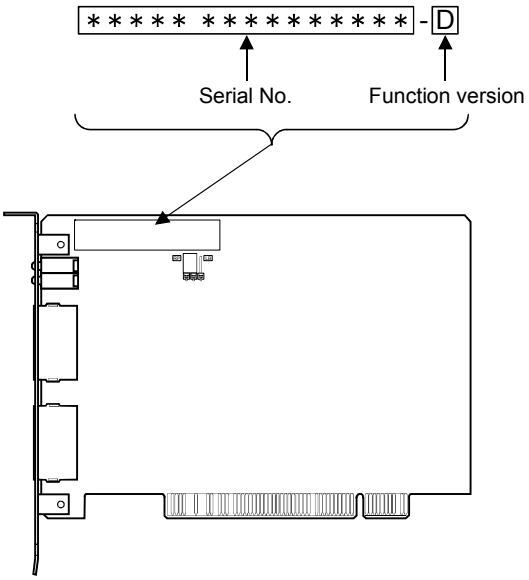
2.6 Checking Versions

This section explains how to check the function version and ROM version of the MELSECNET/H board and the SW0DNC-MNETH-B version.

(1) Checking the function/ROM version of the MELSECNET/H board

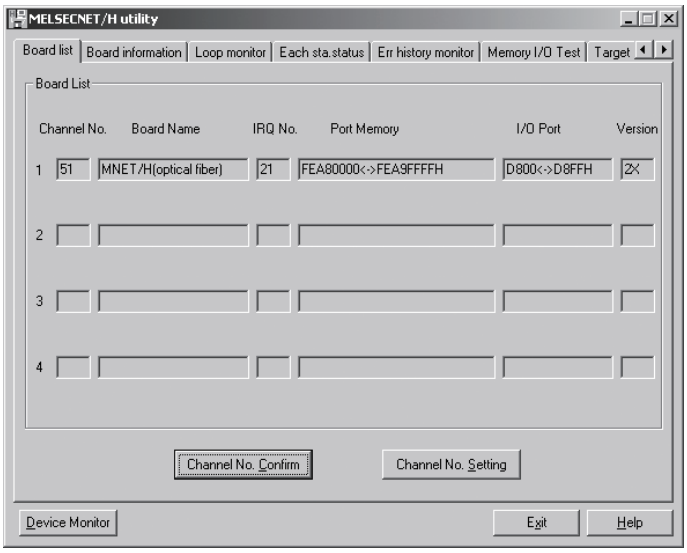
(a) Checking the MELSECNET/H board's function version

The MELSECNET/H board's function version can be identified at "Serial" section on the MELSECNET/H board as shown below.



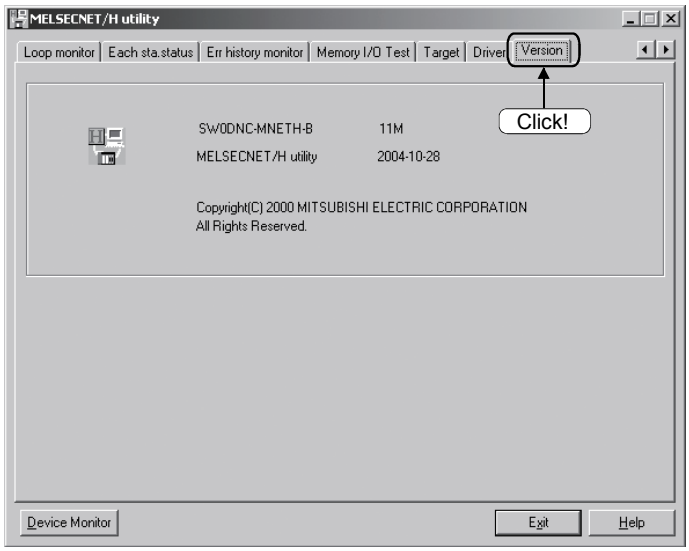
(b) Checking the MELSECNET/H board's ROM version

The MELSECNET/H board's ROM version is shown on "Board list" tab in the MNETH utility.



(2) Checking the SW0DNC-MNETH-B version

The SW0DNC-MNETH-B version is shown on "Version" tab in the MNETH utility.



REMARK

MELSECNET/H board's new functions and compatible SW0DNC-MNETH-B version

New functions	MELSECNET/H board's ROM version	SW0DNC-MNETH-B version
MELSECNET/H Extended mode	2X or later	11M or later
Compatibility with Hyper-Threading technology	All versions	11M or later

3 SPECIFICATIONS

This section explains the MELSECNET/H board general specifications, performance specifications.

3.1 General Specifications

(1) This section explains the MELSECNET/H board general specifications.

Item			Specifications			
			Q80BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71BR11, Q80BD-J71LP21G, Q80BD-J71LP21GE		Q81BD-J71LP21-25	
Operating ambient temperature			0 to 55 °C			
Storage ambient temperature			-25 to 75 °C			
Operating ambient humidity			5 to 95 % RH, No condensation			
Storage ambient humidity			5 to 95 % RH, No condensation			
Vibration Resistance Conforming to JIS B 3502(2000), IEC 61132-2	When there is intermittent vibration	Frequency	10 to 57Hz	57 to 150Hz	5 to 9Hz	9 to 150Hz
		Acceleration	—	$9.8m/s^2$	—	$9.8m/s^2$
		Amplitude	0.075mm	—	3.5mm	—
		Sweep Count	10 times each in X, Y and Z axis (80 minutes)			
	When there is continuous vibration	Frequency	10 to 57Hz	57 to 150Hz	5 to 9Hz	9 to 150Hz
		Acceleration	—	$4.9m/s^2$	—	$4.9m/s^2$
		Amplitude	0.035mm	—	1.75mm	—
		Sweep Count	10 times each in X, Y and Z axis (80 minutes)			
Shock resistance			Conforming to JIS B 3502(2000), IEC 61131-2 (147 m/s^2, 3 times each in 3 directions)			
Operating environment			No corrosive gas present			
Operating height			2000 m(6562 ft) or less			
Installation area			On the control board			
Over-voltage category ＊1			II or less			
Pollution rate ＊2			2 or less			

＊1: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.

＊2: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensation must be expected occasionally.

(2) General specifications of the MELSECNET/H board or the personal computer, whichever are lower, must be satisfied after installation.

3.2 Performance Specifications

MELSECNET/H Board performance specifications are shown below.

(1) Q80BD-J71LP21-25, Q81BD-J71LP21-25,Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE

Item		Specifications				
		Q80BD-J71LP21-25	Q81BD-J71LP21-25	Q80BD-J71LP21S-25	Q80BD-J71LP21G	Q80BD-J71LP21GE
Maximum links in 1 network	LX/LY	8192 Points				
	LB	16384 Points (When in the MELSECNET/10 Mode ＊1: 8192 Points)				
	LW	16384 Points (When in the MELSECNET/10 Mode ＊1: 8192 Points)				
Maximum links in 1 station		• MELSECNET/H mode, MELSECNET/10 mode ＊1 {(LY + LB) / 8 + (2 × LW)} ≦ 2000 bytes • MELSECNET/H Extended mode ＊1 {(LY + LB) / 8 + (2 × LW)} ≦ 35840 bytes				
Communications rate ＊1		25 Mbps / 10 Mbps			10 Mbps	
Number of stations Connected to 1 network		64 Stations (Control station: 1; Normal station: 63)				
Connection cable		Optical fiber cable				
Total extension cable length		30km (98430 ft.)				
Between stations length ＊2	25 Mbps	SI optical cable : 200m (656.2 ft.) H-PCF optical cable : 400m (1312.4 ft.) Broad-band H-PCF optical cable : 1km (3281 ft.) QSI optical cable : 1km (3281 ft.)			—	—
	10 Mbps	SI optical cable : 500m (1640.5 ft.) H-PCF optical cable : 1km (3281 ft.) Broad-band H-PCF optical cable : 1km (3281 ft.) QSI optical cable : 1km (3281 ft.)			GI optical cable : 2km (6562 ft.)	62.5 GI optical cable : 2km (6562 ft.)
Maximum networks		239				
Maximum number of groups		32 (When in the MELSECNET/10 Mode: 9)				
Transmission channel format		Duplex loop				
Communications system		Token ring system				
Synchronization system		Frame synchronization system				
Encoding system		NRZI encoding (Non return to Zero inverted)				
Transfer format		HDLC Standard (Frame format)				
Error control system		CRC ($X^{16} + X^{12} + X^5 + 1$) and retry by overtime.				
RAS function		• Loop back function (optical loop system only) by abnormal detection and cable disconnection. • System down prevention through control station. • Error detection by the link special relay and link special register. etc.				
Transient transmission		N: N communications				
Special cyclic transmission		Low speed cyclic transmission				
Number of boards that can be installed		Maximum 4 boards ＊3				
Installation slot		PC PCI bus slot (half size)	PC PCI Express X1, X2, X4, X8, X16 slot (half size)	PC PCI bus slot (half size)		
Exclusive slots		1 slot		2 slot	1 slot	
External power supply	Voltage	—		20.4 to 31.2 V DC	—	
	Current	—		0.16 A	—	
	Connector	—		Connector set (Accessory)	—	
	Suitable cable size	—		0.50 to 1.25 mm^2 [AWG20-16]	—	
5 V DC Internal current consumption		0.46 A	—	0.46 A	0.45 A	
3.3 V DC Internal current consumption		—	0.95 A	—	—	
Weight		0.10 kg		0.20 kg	0.11 kg	

*1: MELSECNET/H board communications rate and Mode settings are performed using the MNETH Utility. For details, see Section 9.2.3, "Board information screen operation".
*2: L type and H type of the previous optical fiber cable (A-2-□) differ in the distances between stations. For details, see Section 6.4.1, "Optical loop system".
*3: The number of boards that can be installed is the combined number of MELSECNET/H boards and MELSECNET/10 boards.
When using the Q80BD-J71LP21-25, Q81BD-J71LP21-25 or Q80BD-J71LP21S-25 at a communication speed of 25Mbps, errors may occur at all stations if multiple boards with the same network number are installed, or the operating systems are started up/shut down or the boards are reset simultaneously on the adjacent personal computers. In this case, set the communication speed to 10Mbps.

(2) Q80BD-J71BR11

Item		Specifications	
		Q80BD-J71BR11	
Maximum links in 1 network	LX/LY	8192 Points	
	LB	16384 Points (When in the MELSECNET/10 Mode *1: 8192 Points)	
	LW	16384 Points (When in the MELSECNET/10 Mode *1: 8192 Points)	
Maximum links in 1 station		• MELSECNET/H mode, MELSECNET/10 mode *1 {(LY + LB) / 8 + (2 × LW)} ≤ 2000 bytes • MELSECNET/H Extended mode *1 {(LY + LB) / 8 + (2 × LW)} ≤ 35840 bytes	
Communications rate *1		10 Mbps	
Number of stations Connected to 1 network		32 Stations (Control station: 1; normal station: 31)	
Connection cable		Optical fiber cable	Coaxial cable
Total extension cable length in 1 network		Cable name / Total extension cable length / Length between stations 3C-2V: 300 m (Between stations: 300 m)*2 5C-2V: 500 m (Between stations: 500 m)*2 Can be extended to 2.5 km (8202.5 ft.) using a repeater unit (A6BR10, A6BR10-DC).	
Maximum networks		239	
Maximum number of groups		32 (When in the MELSECNET/10 Mode: 9)	
Transmission channel format		Single Bus	
Communications system		Token bus system	
Synchronization system		Frame synchronization system	
Encoding system		NRZI encoding (Non return to Zero inverted)	Manchester encoding
Transfer format		HDLC Standard (Frame format)	
Error control system		CRC (X16 + X12 + X5 + 1) and retry by overtime.	
RAS function		• Loop back function (optical loop system only) by abnormal detection and cable disconnection. • System down prevention through control station. • Error detection by the link special relay and link special register. etc.	
Transient transmission		N:N communications	
Special cyclic transmission		Low speed cyclic transmission	
Number of boards that can be installed		Maximum 4 boards *3	
Installation slot		PC PCI bus slot (half size)	
Exclusive slots		1 slot	
5 V DC Internal current consumption		0.67 A	
Weight		0.11 kg	

*1: MELSECNET/H board communications rate and Mode settings are performed using the MNETH Utility. For details, see Section 9.2.3, "Board information screen operation".
*2: Depending on the number of stations connected, there are limits to the cable length between stations. For details, see section 6.4.2, "Coaxial bus system".
*3: The number of boards that can be installed is the combined number of MELSECNET/H boards and MELSECNET/10 boards.

3.3 Optical Fiber Cable Specification

For the optical fiber cable specification, see "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)".

3.4 Coaxial Cable Specification

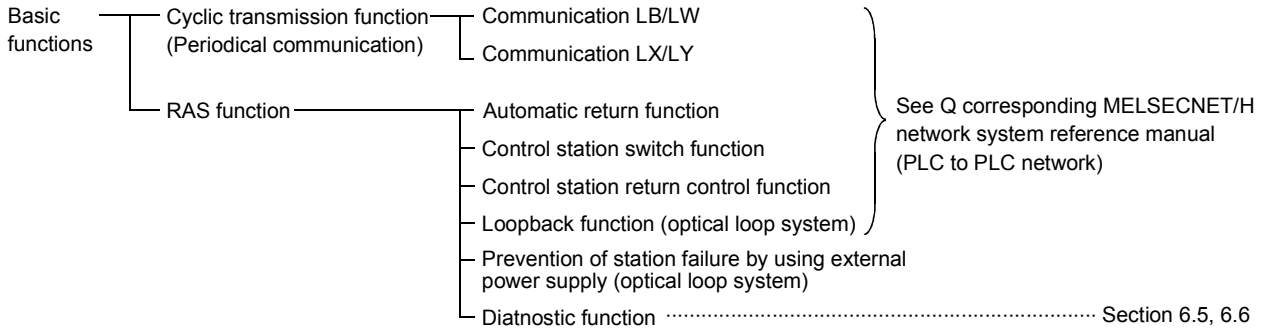
For the coaxial cable specification, see "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)".

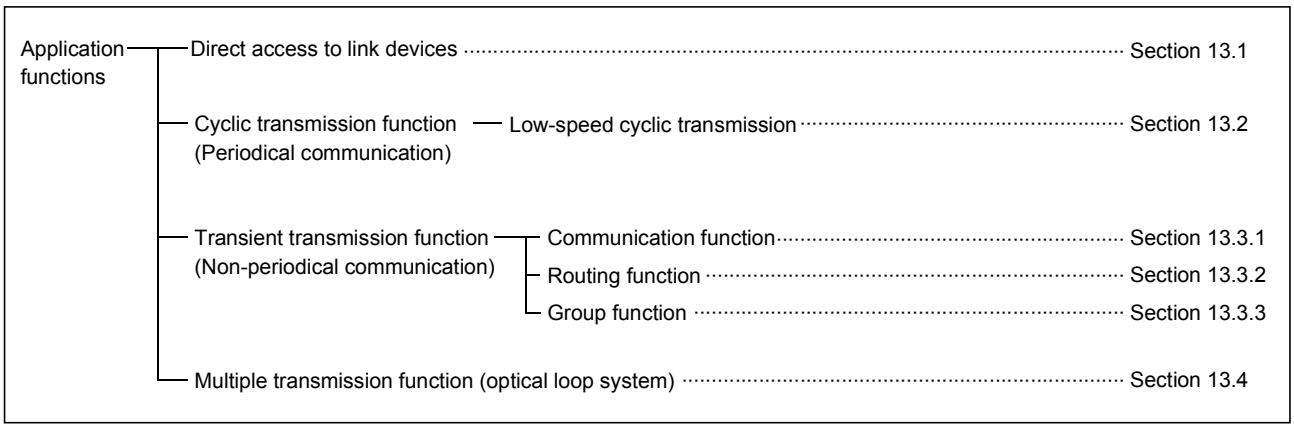
4 FUNCTION

This chapter explains the function of MELSECNET/H board.

4.1 Function List

The following flowchart shows the function list for MELSECNET/H board.


Basic functions
Cyclic transmission function (Periodical communication)
Communication LB/LW
Communication LX/LY
RAS function
Automatic return function
Control station switch function
Control station return control function
Loopback function (optical loop system)
Prevention of station failure by using external power supply (optical loop system)
Diatnostic function
Section 6.5, 6.6
See Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)



4.2 Specifications of the Link Data Sending/Receiving Processing Time

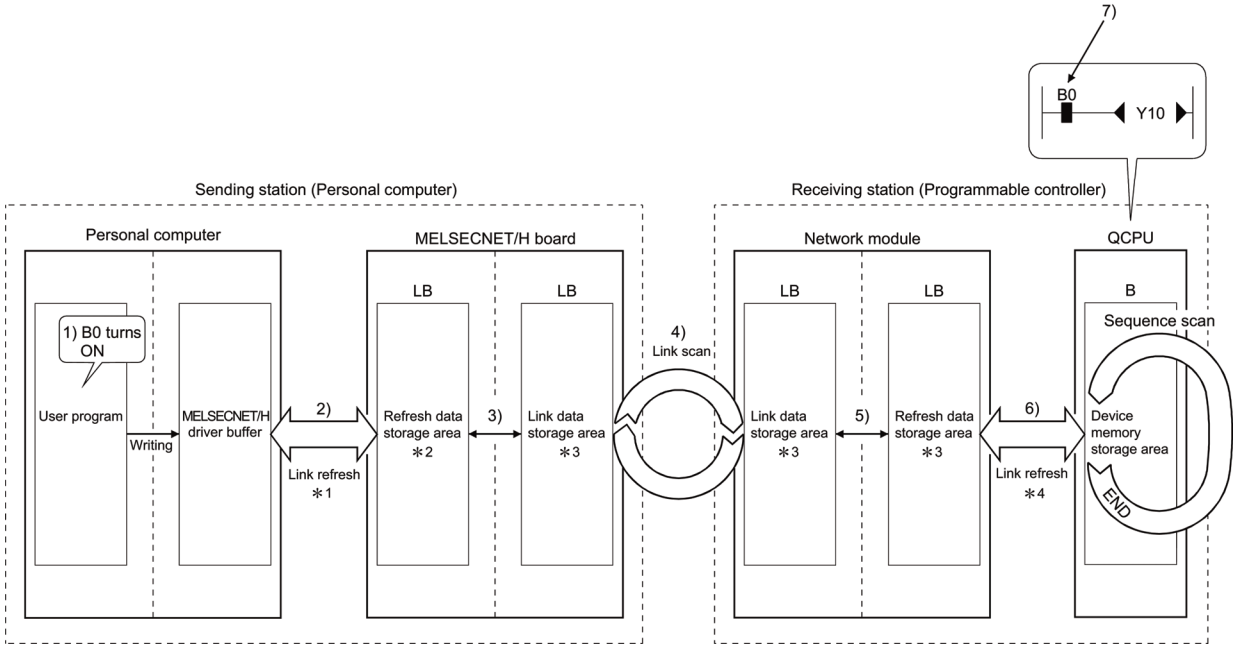
This section explains the link data sending/receiving processing in the MELSECNET/H network system with MELSECNET/H board.

4.2.1 Link data sending/receiving processing

(1) Link data sending/receiving processing

In the cyclic transmission, communication is performed using the LB/LW/LX/LY devices of the network module and MELSECNET/H board.
This section explains the case when the link relay (B) is used on the personal computer side.

1) B0 on the sending station (personal computer) turns on.
2) By a link refresh, the B0 information is stored in the refresh data storage area (LB) of the MELSECNET/H board.
3) The B0 information in the refresh data storage area (LB) is stored in the link data storage area (LB).
4) By a link scan, the B0 information in the link data storage area (LB) is stored in the link data storage area (LB) of the network module on the receiving station.
5) The B0 information in the link data storage area (LB) is stored in the refresh data storage area (LB).
6) By a link refresh, the B0 information is stored in the device memory storage area (B) of the CPU module.
7) B0 on the receiving station turns on.

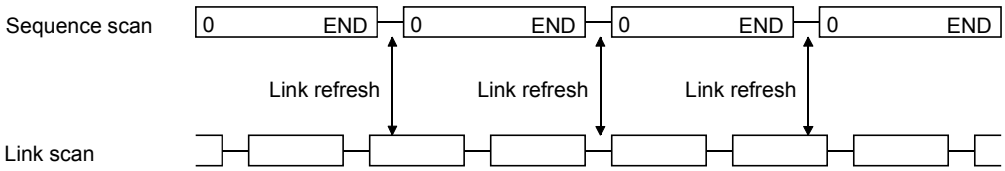


*1: The link refresh interval is set on the "Driver" screen in the MNETH Utility.
*2: Set by the GX Developer's "Station Inherent Parameters." (If not set, they are stored in the common parameters state.)
*3: If the MELSECNET/H board is a control station, it is set in the "Common Parameter Setting" screen in the MNETH Utility. If the network module is a control station, it is set in the GX Developer's "Common Parameters."
*4: Set in the GX Developer's "Network Refresh Parameters."

(2) Link scan and link refresh

The link scan is executed "asynchronous" with the sequence scan of the CPU module.

The link refresh is executed by the "END processing" of the CPU module.



(3) Link data when a communication error station or communication stop station occurs on the network

When a communication error or communication stop station occur on the network during the data link, the receive data from those stations immediately before the error occurrence is retained.

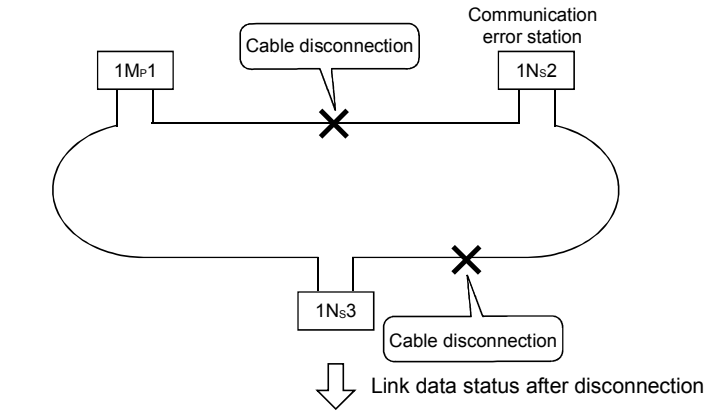
(A "communication stop station" refers to a station whose cyclic transmission has been stopped by a peripheral device.)

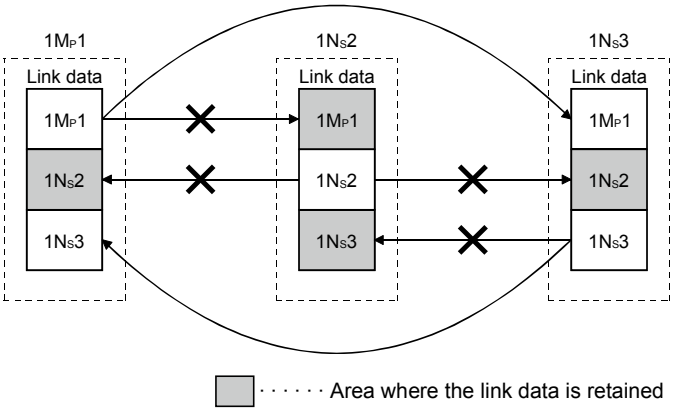
(a) The receive data from a communication error station or communication stop station is retained by a normally communicating station.

(b) The receive data from other station is retained by a communication stop station.

(Example)

When a communication error has occurred to 1NS2 due to cable disconnection





(4) SB/SW when a communication error station/communication stop station occurs on the network

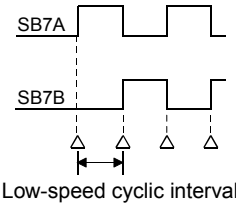
The status of whether there are any communication error/communication stop stations on the network can be checked with the link special relay/register (SB/SW).

Use them as interlocks for programs.

For interlock program examples, refer to the following manual.

Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

Link special relays and registers

Link special relay/register	Description	Signal status	
		Off	On
SB20	Indicates the operation status of the network module and the communication status with the CPU.	Normal	Abnormal
SB47	Shows the baton pass execution status of the host.	The baton pass is being executed	The baton pass is stopped
SB49	Shows the cyclic transmission status of the host.	Normal	Abnormal
SB70	Shows the baton pass execution status of all stations (including the host). However, it only shows the status for the number of stations set with parameters.	The baton pass is being executed on all stations	Occurrence of communication stop station
SW70 to 73	Shows the baton pass execution status of each station. Each bit corresponds to the status of each station.	The baton pass is being executed	The baton pass is stopped
SB74	Shows the cyclic transmission status of all stations (including the host). However, it only shows the status for the number of stations set with parameters.	All stations normal	Occurrence of abnormal station
SW74 to 77	Shows the cyclic transmission status of each station. Each bit corresponds to the status of each station.	Normal	Abnormal
SB7A, 7B	Shows the low-speed cyclic transmission status. The transmission completion is indicated by the on/off status of either bit SB7A or 7B.		
SW1FC to SW1FF	Shows the redundant CPU system status (Control or Standby) of each station. Each bit corresponds to each station status.	Control system *1	Standby system

*1: Stations in other than the redundant CPU system configuration are OFF.

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5 EMC AND LOW VOLTAGE DIRECTIVE

For the products sold in European countries, the conformance to the EMC Directive, which is one of the European Directives, has been a legal obligation since 1996. Also, conformance to the Low Voltage Directive, another European Directive, has been a legal obligation since 1997.
Manufacturers who recognize their products must conform to the EMC and Low Voltage Directives are required to declare that their products conform to these Directives and put a "CE mark" on their products.

5.1 Requirements for Conformance to EMC Directive

The EMC Directive specifies that products placed on the market must "be so constructed that they do not cause excessive electromagnetic interference (emissions) and are not unduly affected by electromagnetic interference (immunity)". The applicable products are requested to meet these requirements. The sections 5.1.1 through 5.1.5 summarize the precautions on conformance to the EMC Directive of the machinery constructed using the MELSECNET/H board.
The details of these precautions has been prepared based on the control requirements and the applicable standards . However, we will not assure that the overall machinery manufactured according to these details conforms to the above-mentioned directives. The final decision on the method for the EMC Directive conformance and the application must be made by the manufacturer of the machinery.

5.1.1 Standards applicable to the EMC Directive

The standards applicable to the EMC Directive are listed below.
All test items were tested by installing each device on a personal computer bearing a CE certification logo.

Specification	Test item	Test details	Standard value
EN50081-2 : 1995	EN55011 Radiated noise	Electromagnetic emissions from the product are measured.	30M-230MHz QP : 30dB μ V/m (30 m in measurement range) ＊1 230M-1000MHz QP : 37 dB μ V/m (30 m in measurement range)
	EN55011 Conducted noise	Electromagnetic emissions from the product to the power line is measured.	150k-500kHz QP: 79 dB, Mean: 66 dB ＊1 500k-30MHz QP: 73 dB, Mean: 60 dB
EN61131-2 : 1996	EN61000-4-2 Electrostatic immunity	Immunity test in which static electricity is applied to the cabinet of the equipment.	15kV Aerial discharge
	EN61000-4-4 Fast transient burst noise	Immunity test in which burst noise is applied to the power line and signal lines.	Power line: 2kV Digital I/O (24V or higher): 1kV (Digital I/O (24V or less)) > 250V (Analog I/O, signal lines) > 250V
	EN61000-4-3 Radiated field AM modulation	Immunity test in which field is irradiated to the product.	10V/m, 26-1000MHz, 80%AM modulation@1kHz
	EN61000-4-12 Damped oscillatory wave immunity	Immunity test in which a damped oscillatory wave is superimposed on the power line.	Power line: 1kV Digital I/O (24V or higher): 1kV

＊1 : QP : Quasi-peak value, Mean : Mean value

5.1.2 Installing devices in the control panel

Installing devices in the control panel has a considerable effect, not only securing safety but also shielding the noise generated from the personal computer in the control panel.

(1) Control panel

(a) Use a conductive control panel.

(b) When attaching the control panel's top plate or base plate, mask painting and weld so that good surface contact can be made between the panel and plate.

(c) To ensure good electrical contact with the control panel, mask the paint on the installation bolts of the inner plate in the control panel so that contact between surfaces can be ensured over the widest possible area.

(d) Ground the control panel with a thick wire so that a low impedance connection to ground can be ensured even at high frequencies.

(e) Holes made in the control panel must be 10 cm (3.94 in.) diameter or less. If the holes are 10 cm (3.94 in.) or larger, radio frequency noise may be emitted.
In addition, because radio waves leak through a clearance between the control panel door and the main unit, reduce the clearance as much as practicable. The leakage of radio waves can be suppressed by the direct application of an EMI gasket on the paint surface.

Maker name	Series type
KITAGAWA INDUSTRIES CO., LTD.	US series
ZIPPERTUBING (JAPAN) LTD.	71TS series
SEIWA ELECTRIC MFG CO., LTD.	E02S□□□A

Our tests have been carried out on a panel having the damping characteristics of 37 dB max. and 30 dB mean (measured by 3 m method with 30 to 300 MHz).

(2) Connection of power and ground cable

The power supply cable and ground cable for a personal computer should be laid out as follows:

(a) Provide a grounding point near the power supply of personal computer. Ground the FG (frame ground) terminal of the personal computer and the SLD (shield) terminal of the MELSECNET/H board with the thickest and shortest grounding wire (wire for grounding) possible (about 30 cm (11.81 in.) or less in length). Since the FG and SLD terminals function to ground the noise generated in the personal computer, it is necessary to ensure the lowest possible impedance.
As the wires are used to relieve the noise, the wire itself contains a large amount of noise and thus short wiring prevents from functioning as an antenna.

(b) Twist the ground cable leading to the ground point with the power supply cable. By twisting it with the ground cable, the noise leaking from the power supply cable may be grounded at a higher rate. However, twisting the power supply cable with the ground cable may not be necessary if a noise filter is installed on the power supply cable.

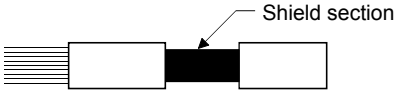
5.1.3 Cables

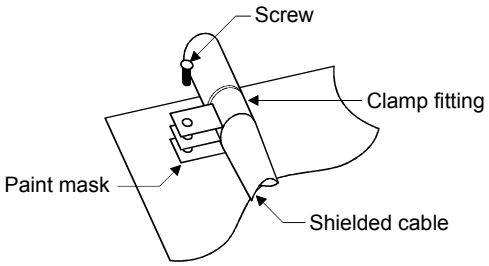
The cables extracted from the control panel contain a high frequency noise component. On the outside of the control panel, therefore, they serve as antennas to emit noise. Use shielded cable for the to be extracted to the outside of the control panel.
The use of a shielded cable also increases noise resistance.

(1) Grounding of shielded of shield cable

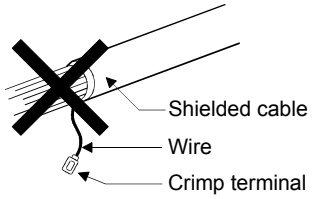
(a) Ground the shield of the shield cable as near the exit as possible from the control panel.
If the ground point is not near the outlet, the cables after the ground point will cause electromagnetic induction, and will generate a higher harmonic noise.

(b) Peel part of the shielded cable's sheath, and ground a wide section of the exposed shielded section against the control panel.
Clamp fittings can be used as shown below. Note that the painting on the inner side of the control panel, against which the clamp fitting is contacted, must be masked.



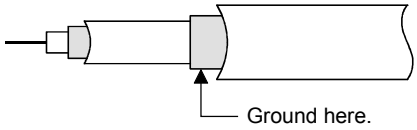


Note) The method of grounding by soldering a wire onto the shield section of the shielded cable as shown below is not recommended. The high frequency impedance will increase and the shield will be ineffective.



(2) Treatment of the coaxial cable ground

(a) Always use a double-shielded coaxial cable (MITSUBISHI CABLE : 5C-2V-CCY) for the coaxial cables Q80BD-J71BR11. Radiated noise in the range of 30MHz or higher can be suppressed by use of the double-shielded coaxial cables. Ground the double-shielded coaxial cable by connecting its outer shield to the ground.



(b) Attach a ferrite core to the double-shielded coaxial cable connected to the Q80BD-J71BR11.
The ferrite core should be attached on each cable near the outlet of the control panel.
Refer to section "5.1.4 Ferrite core" for details.

5.1.4 Ferrite core

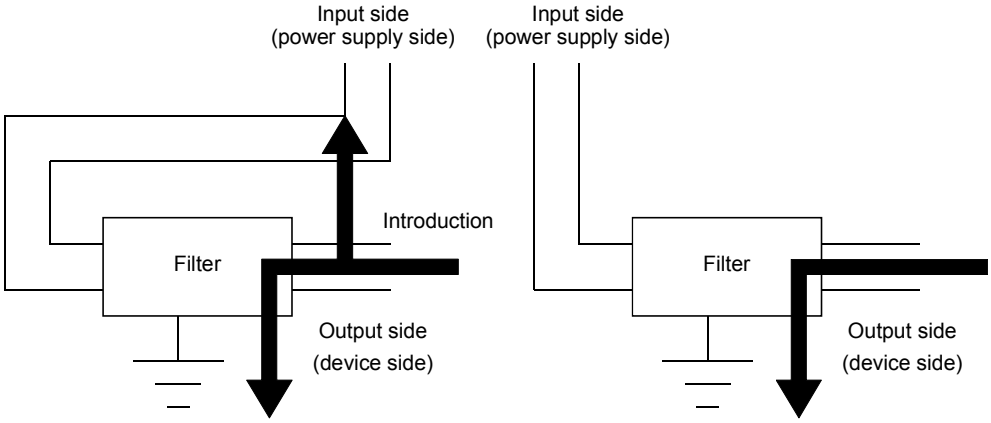
A ferrite core has the effect of reducing radiated noise in the 30MHz to 100MHz band. It is not required to fit ferrite cores to cables, but it is recommended to fit ferrite cores if shield cables pulled out of the enclosure do not provide sufficient shielding effects. It should be noted that the ferrite cores should be fitted to the cables in the position immediately before they are pulled out of the enclosure. If the fitting position is improper, the ferrite will not produce any effect.

• Ferrite core
  Type: ZCAT3035-1330 (TDK ferrite core)

5.1.5 Noise filter (power supply line filter)

A noise filter is a component which has an effect on conducted noise.
It is not required to fit the noise filter to the power supply line, but fitting it can further suppress noise. (The noise filter has the effect of reducing conducted noise of 10MHz or less.) The precautions required when installing a noise filter are described below.

(1) Do not bundle the wires on the input side and output side of the noise filter. When they are bundled, the output side noise will induct into the input side wires.



(a) The noise will induct into input side when the input and output wires are bundled.

(b) Separate the input and output wires.

(2) Ground the ground terminal of the noise filter to the control panel using as short wiring as possible (about 10 cm (3.94 in.)).

REMARK

Reference noise filters are shown below.

Noise filter type	Maker name	Rated current	Rated voltage
FN343-3/01	SCHAFFNER	3A	250V
FN660-6-06		6A	
ZHC2203-11	TDK	3A	

5.2 Requirements for Conformance to Low Voltage Directive

The MELSECNET/H board is out of the requirement for conformance to the Low Voltage Directive, since it does not use the power supply in the range of 50 to 1000V AC and 75 to 1500V DC.

MEMO

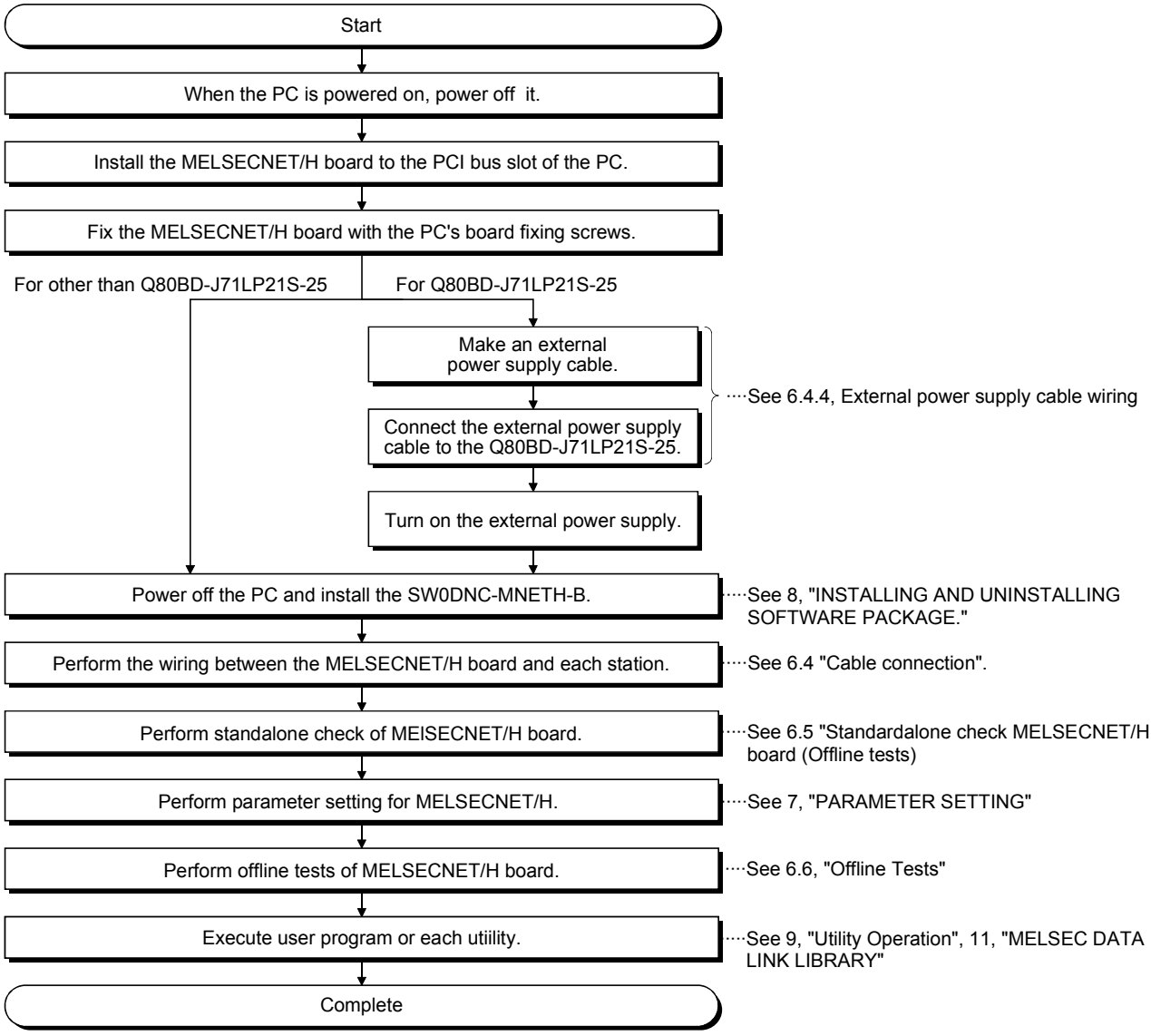
5 - 6

6 PROCEDURE AND SETTINGS UP TO THE POINT OF OPERATION

This section explains the operating procedure up to the point the MELSECNET/H board is operated.

6.1 Procedure Up to the Point of Operation

An outline of the procedure up to the point of MELSECNET/H board operation is explained below.


Start
When the PC is powered on, power off it.
Install the MELSECNET/H board to the PCI bus slot of the PC.
Fix the MELSECNET/H board with the PC's board fixing screws.
For other than Q80BD-J71LP21S-25
For Q80BD-J71LP21S-25
Make an external power supply cable.
Connect the external power supply cable to the Q80BD-J71LP21S-25.
See 6.4.4, External power supply cable wiring
Turn on the external power supply.
Power off the PC and install the SW0DNC-MNETH-B.
See 8, "INSTALLING AND UNINSTALLING SOFTWARE PACKAGE."
Perform the wiring between the MELSECNET/H board and each station.
See 6.4 "Cable connection".
Perform standalone check of MEISECNET/H board.
See 6.5 "Standardalone check MELSECNET/H board (Offline tests)
Perform parameter setting for MELSECNET/H.
See 7, "PARAMETER SETTING"
Perform offline tests of MELSECNET/H board.
See 6.6, "Offline Tests"
Execute user program or each utiility.
See 9, "Utility Operation", 11, "MELSEC DATA LINK LIBRARY"
Complete

REMARK

It is necessary to perform settings on the control station side in order to use the MELSECNET/H board as a normal station. Set the control station side as required. See manuals listed below for the setting on the control station side.

- Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)
- QnA/Q4AR Corresponding MELSECNET/10 network system reference manual

6.2 Installation

This section explains precautions when handling the MELSECNET/H board and the installation environment.

6.2.1 Precautions when handling

The following are precautions to be noted when handling the MELSECNET/H board.

DANGER

- While energizing, do not touch the connector.
  Doing so may result in electric shock or cause malfunctioning.

CAUTION

- Fasten the MELSECNET/H board securely using the installation screws and tighten the installation screws securely within the specified torque range.
  If the screws are loose, this may cause malfunctioning.
  If the screws are tightened too much, this could cause damage to the screws or unit, leading to malfunctioning.
- Do not directly touch the conductive section of the MELSECNET/H board.
  Doing so could result in malfunctioning or breakdown of the MELSECNET/H board.
- Before handling the MELSECNET/H board, touch a grounded metal object to discharge the static electricity from the human body.
  Failure to do so may cause failure or malfunction of the MELSECNET/H board.
- Handle the MELSECNET/H board in a location where there is no static electricity.
  Static electricity could result in failure or malfunctioning.
- The MELSECNET/H board is packed in a bag for preventing static electricity.
  Always place the MELSECNET/H board in this bag when storing or transporting.
  Otherwise, failure or malfunctioning may result.
- Take care that foreign objects such as chips or wiring debris do not get into the PC.
  This could result in fire, breakdowns or malfunctioning.
- Do not dismantle or rebuild the MELSECNET/H board.
  This will result in failure, malfunctioning, injury or fire.
- Be sure to shut off all phases of the external power supply used by the system before installing or removing the MELSECNET/H board.
  If power is not turned off, there is a risk of electric shock or damage to the product.
- When disposing of the product, handle it as an industrial waste.
- Do not drop the MELSECNET/H board or subject it to strong impact.
  This will result in failure or malfunctioning of the board.

For the tightening torque of the MELSECNET/H board installation screws, refer to the handling instructions supplied with the personal computer.

6.2.2 Installation environment

See the instruction manual accompanying the PC module regarding installation of the PC module in which the MELSECNET/H board is mounted.

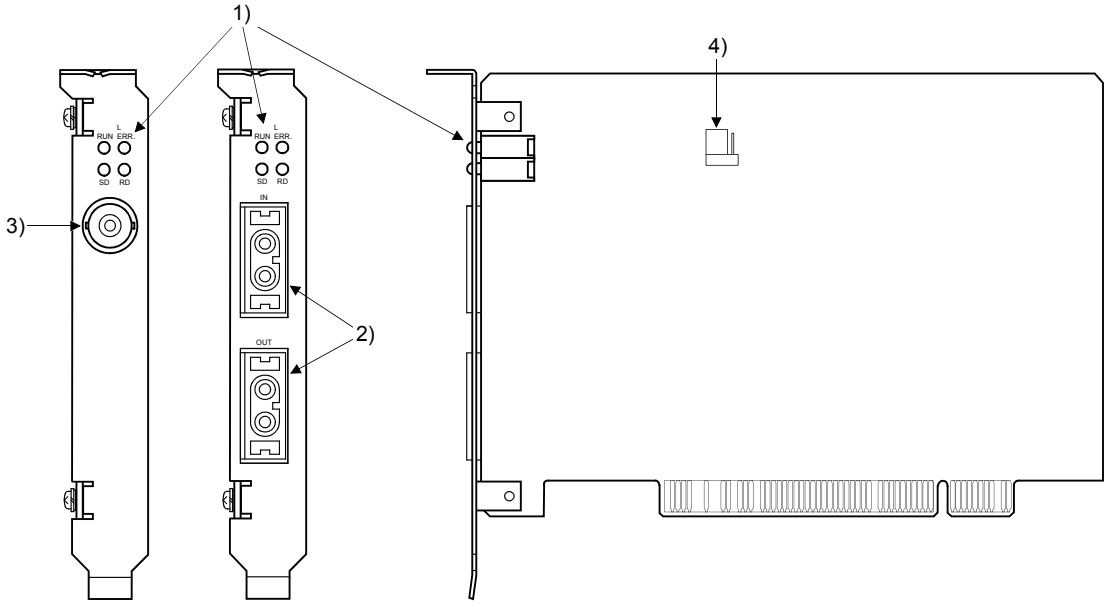
CAUTION

- Always ground the PC module using grounding type D (Class 3 grounding).
  Otherwise, there is the risk of malfunctioning.

6.3 Names of Each Part and Their Settings

The names of each part of the MELSECNET/H board and their settings are explained below.

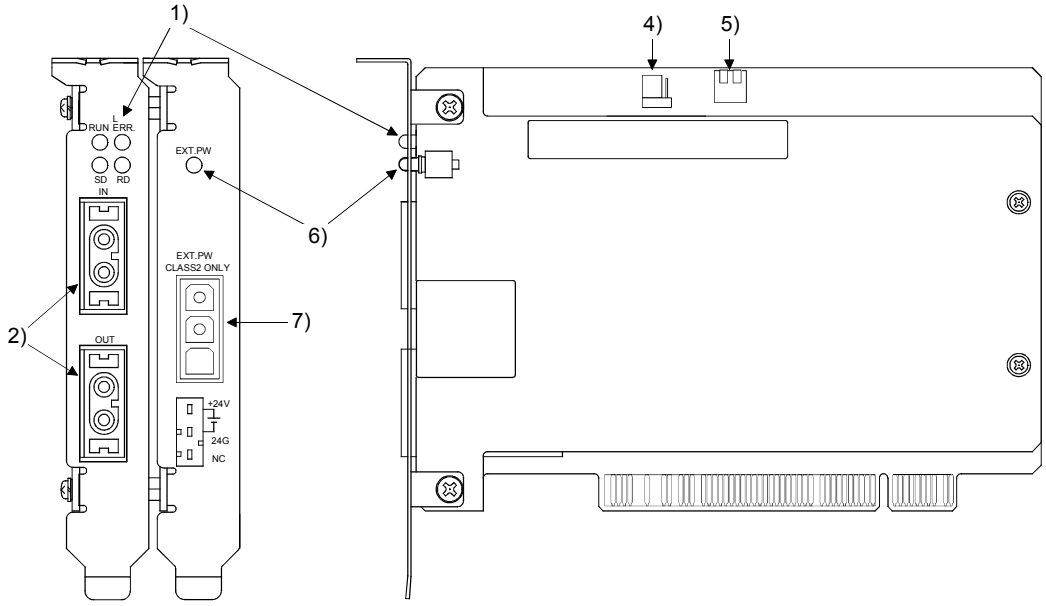
(1) Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21G, Q80BD-J71LP21GE, Q80BD-J71BR11



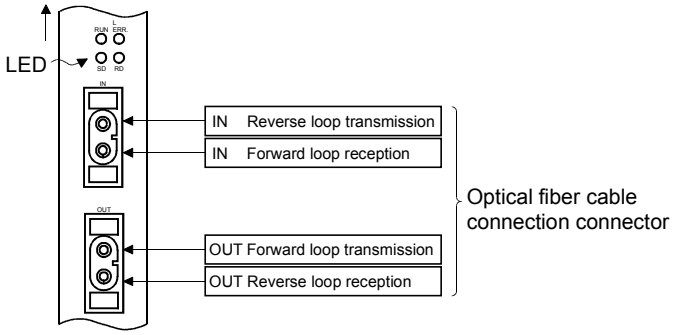
Q80BD-J71BR11

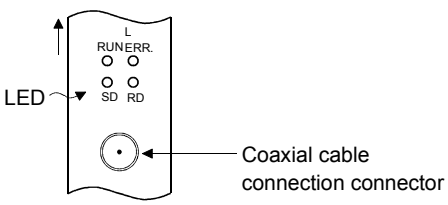
Q80BD-J71LP21-25
Q81BD-J71LP21-25
Q80BD-J71LP21G
Q80BD-J71LP21GE

(2) Q80BD-J71LP21S-25

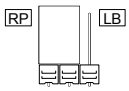
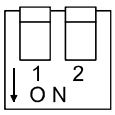
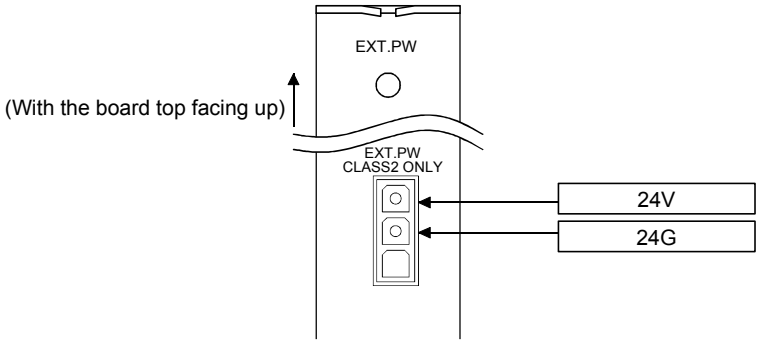


<table>
<tr><th>No.</th><th>Name</th><th>Description</th></tr>
<tr><td>1)</td><td>Indicator LED

RUN L ERR.
○ ○
○ ○
SD RD</td><td>
Shows the MELSECNET/H board's operating state.
When the LED is lighted up, there are two display formats, one for the normal mode and the other for the error mode.
(1) Normal Mode
In the normal mode, if a communications error occurs, judge that it is an error from the LED state in the MELSECNET/H utility "Board Information."
As for the LED state in the "Board Information" screen, see Section 9.2.3, "Board information screen operations."
<table>
<tr><th>LED name</th><th>Status</th><th>Description</th></tr>
<tr><td rowspan="2">RUN.</td><td>Off</td><td>A WDT error has occurred, or the board is being reset.</td></tr>
<tr><td>Lighted up</td><td>Operating normally.</td></tr>
<tr><td rowspan="2">L.ERR</td><td>Off</td><td>A communications error has not occurred.</td></tr>
<tr><td>Lighted up</td><td>A communications error has occurred.</td></tr>
<tr><td rowspan="2">SD</td><td>Off</td><td>Data not transmitted.</td></tr>
<tr><td>Lighted up</td><td>Data are being transmitted.</td></tr>
<tr><td rowspan="2">RD</td><td>Off</td><td>Data not received.</td></tr>
<tr><td>Lighted up</td><td>Data are being received.</td></tr>
</table>
(2) Error mode
When the RUN LED is blinking, the LED display format is the error mode.
In the error mode, is an error occurs, confirm the content of the error using the error viewer or the event viewer.
For details, see Section 9.4, "Error Viewer Operation."
<table>
<tr><th>LED name</th><th>Status</th><th>Description</th></tr>
<tr><td rowspan="2">RUN.</td><td>Blinking</td><td>Shows that it is in the error mode.</td></tr>
<tr><td>Off
Lighted up</td><td>No error</td></tr>
<tr><td rowspan="2">L.ERR</td><td>Off</td><td>An OS starting error has not occurred.</td></tr>
<tr><td>Lighted up</td><td>An OS starting error has occurred.</td></tr>
<tr><td rowspan="2">SD</td><td>Off</td><td>A driver response error has not occurred.</td></tr>
<tr><td>Lighted up</td><td>A driver response error has occurred.</td></tr>
<tr><td rowspan="2">RD</td><td>Off</td><td>A PCI bus error has not occurred.</td></tr>
<tr><td>Lighted up</td><td>A PCI bus error has occurred.</td></tr>
</table>
</td></tr>
<tr><td>2)</td><td>Connector for connecting optical fiber cable</td><td>
Connector for connecting optical fiber cable.
(1) The cable terminal is as shown below.


(2) See Section 6.4, "Cable Connections." for wiring of the optical fiber cable.
</td></tr>
<tr><td>3)</td><td>Connector for connecting coaxial cable</td><td>
Connector for connecting coaxial cable.
(1) The cable terminal is as shown below.


(2) See Section 6.4, "Cable Connections." for wiring of the coaxial cable.
</td></tr>
</table>

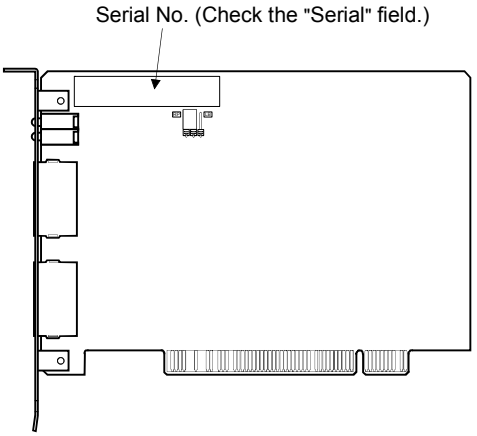
<table>
<tr><th>No.</th><th>Name</th><th>Description</th></tr>
<tr><td>4)</td><td>Jumper *1
 
</td><td>Use prohibited (Fixed to RP side)</td></tr>
<tr><td>5)</td><td>DIP switch
 
</td><td>Use prohibited (Fixed to OFF)</td></tr>
<tr><td>6)</td><td>External power supply indicator LED</td><td>The external power supply status is indicated.
<table>
<tr><th>LED name</th><th>Status</th><th>Description</th></tr>
<tr><td rowspan="2">EXT.PW</td><td>Unlit</td><td>No external power supplied</td></tr>
<tr><td>Lit</td><td>External power supplied</td></tr>
</table></td></tr>
<tr><td>7)</td><td>External power supply cable connector</td><td>Connector for connecting external power supply cable
The cable terminal assignment is as shown below.
 
</td></tr>
</table>

*1: The jumper is provided for all of the Q80BD-J71LP21S-25, Q81BD-J71LP21-25, and the Q80BD-J71LP21-25 and Q80BD-J71LP21G of the following serial No.

Q80BD-J71LP21-25:
The sixth digit (from the left) of the serial No. is 7 or higher.
*****[7]**********-*

Q80BD-J71LP21G, Q80BD-J71LP21GE:
The sixth digit (from the left) of the serial No. is 4 or higher.
*****[4]**********-*

The serial No. of the board can be verified at the part shown in the illustration.



6.4 Cable Connection

This section explains precautions when connecting cables to MELSECNET/H board.

(1) Precautions on general wiring

DANGER

- Be sure to shut off all phases of the external power supply used by the system before performing work such as installing the MELSECNET/H board and wiring. If all power is not turned off, there is a risk of electric shock or damage to the product.
- When turning on the power and operating the module after having installed the MELSECNET/H board and doing the wiring, always attach the cover for the device module in which the MELSECNET/H board is installed. There is a risk of electric shock if the module cover is not attached.

CAUTION

- When removing the cable from the MELSECNET/H board, do not pull the cable. Pulling the cable that is still connected to the MELSECNET/H board may cause damage to the MELSECNET/H board or cable, or malfunction due to bad cable contacts.
- Prevent foreign matter such as chips or wiring debris from getting on the MELSECNET/H board. Failure to do so can result in fire, breakdowns or malfunction.

(2) Precautions on communication cable wiring

CAUTION

- Solder the coaxial cable properly. If the soldering is incomplete, it may cause the module malfunction.
- For the communication cable, specialized skills and tools are required to connect the plug and cable. The connector plug itself is a custom part. When purchasing, consult your local Mitsubishi representative. If the connection is incomplete, this can result in a short, fire or malfunction.
- Be sure to fix communication cables connecting to the MELSECNET/H board by placing them in the duct or clamping them. Cables not placed in the duct or without clamping may be hang freely and accidentally pulled, which may cause damage to the MELSECNET/H board or cable, or malfunction due to bad cable contacts.

REMARK

See "Q corresponding MELSECNET/H reference manual (PLC to PLC network) for details of each communication cable.

(3) Precautions on external power supply cable wiring

⚠CAUTION

- Verify the rated voltage and pin assignment of the product and connect the external power supply cable properly.
  Connecting a power supply with a different voltage rating, imperfect cable crimping or faulty wiring may cause a fire or failure.
- Use a specified tool for crimping of the cable and contacting pin. Imperfect crimping may cause malfunction.
- Verify the pin assignment and fully insert the crimped contacting pin into the connector. Imperfect insertion may cause failure or malfunction.
- Insert the wired external power supply cable into the external power supply cable connector until a click is heard. Imperfect insertion may cause failure or malfunction.
- Keep the external power supply cable away from the main circuit cable, power cables and/or load cables connected to other than programmable controllers. Ensure a distance of 100mm between them. Failure to do so may result in malfunction due to noise, surge or induction.

6.4.1 Optical loop system

The precautions for connecting the optical fiber cable with Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE in an optical loop system are given below.

(1) Precautions for connecting

(a) The types of optical fiber cables that can be used vary depending on the distance between stations.

Type		Distance between stations (m)			
		Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25		Q80BD-J71LP21G 10Mbps (fixed)	Q80BD-J71LP21GE 10Mbps (fixed)
		10Mbps	25Mbps		
SI type optical fiber cable (Old type: A-2P-□)	L type	500 (1640.5 ft.)	200 (656.2 ft.)	Not allowed	Not allowed
	H type	300 (984.3 ft.)	100 (328.1 ft.)		
SI optical fiber cable		500 (1640.5 ft.)	200 (656.2 ft.)		
H-PCF optical fiber cable		1000 (3281 ft.)	400 (1312.4 ft.)		
Broad-band H-PCF optical fiber cable		1000 (3281 ft.)	1000 (3281 ft.)		
QSI optical fiber cable		1000 (3281 ft.)	1000 (3281 ft.)		
GI optical fiber cable		Not allowed	Not allowed	2000 (6562 ft.)	
62.5 GI optical fiber cable				Not allowed	2000 (6562 ft.)

(b) When connecting an optical fiber cable to Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE the restrictions on the bending radius should be observed.
For bending radius details, check with the cable to use.

(c) Maintain the bending radius of the optical fiber cable within the allowable range using a tool for securing the optical fiber cable bending radius.
This tool may be purchased from Mitsubishi Electric System Service, Inc, or your nearest dealer. Please inquire for more information.

(d) When laying the optical-fiber cables, do not touch the fiber cores of the cable and module connectors, and do not let dust or particles collect on them.
If oil from hands, dust or particles adhere to the cores, the accumulated transmission loss may cause malfunctions in the data link.
Do not detach the cover until the cable is attached.

(e) When attaching or detaching the optical fiber cable to/from the module, pull or insert the cable by holding the cable connector securely with your hand.

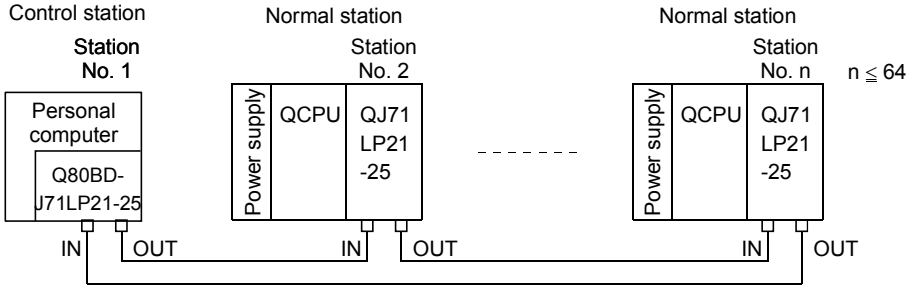
(f) Connect the cable and module connectors securely until you hear a "click" sound.

(g) When attaching or detaching the optical fiber cable to/from the module, make sure to power off the personal computer and external power supply.

(2) Cable connection

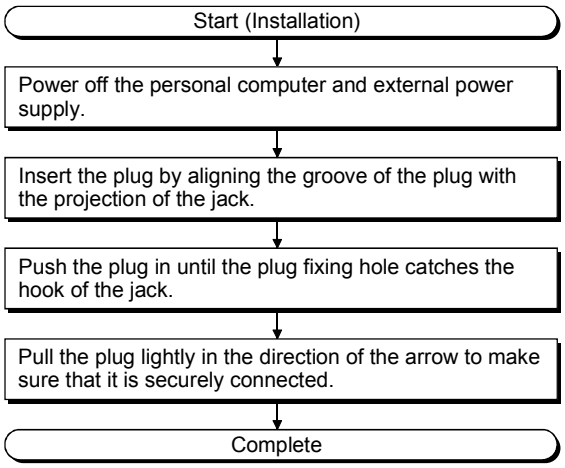
(a) How to connect the cable

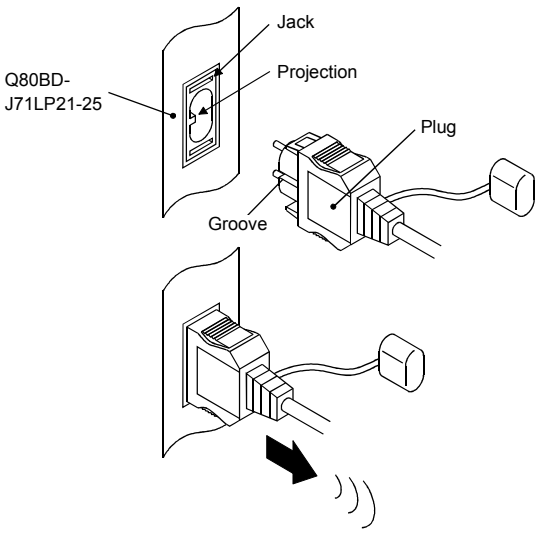
Connect the IN and OUT terminals with optical fiber cables as shown below.
Stations do not have to be connected in the order of station numbers.
Any station number can be assigned as the control station.



(b) Installing the optical fiber cable

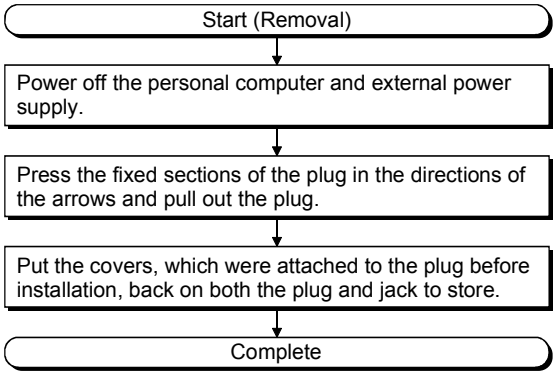
The following shows how to install the optical fiber cable:

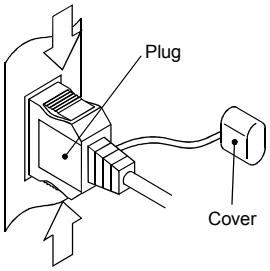

Start (Installation)
Power off the personal computer and external power supply.
Insert the plug by aligning the groove of the plug with the projection of the jack.
Push the plug in until the plug fixing hole catches the hook of the jack.
Pull the plug lightly in the direction of the arrow to make sure that it is securely connected.
Complete



(c) Removing the optical fiber cable

The following shows how to remove the optical fiber cable:


Start (Removal)
Power off the personal computer and external power supply.
Press the fixed sections of the plug in the directions of the arrows and pull out the plug.
Put the covers, which were attached to the plug before installation, back on both the plug and jack to store.
Complete



POINT

Data link operation may be executed even if IN and IN or OUT and OUT are connected with an optical fiber cable. However, the loopback function, the network diagnostic function and some of other functions do not operate normally. So, make sure to connect IN and OUT.

6.4.2 Coaxial bus system

This section explain precautions for connection of the coaxial cable and Q80BD-J71BR11 in the coaxial bus system.

(1) Precautions in connecting

(a) Restrictions on the cable length between the stations

1) When connecting between the network modules, the cable lengths indicated in the table below should be used according to the number of stations connected.
A communication error may occur if a cable length other than the lengths indicated in the table is used.

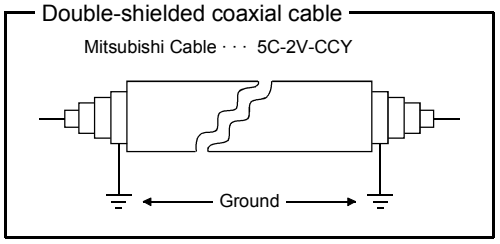
Number of stations connected / Station-to-station cable length	2 to 9 stations		10 to 33 stations	
Cable type	3C – 2V	5C – 2V	3C – 2V	5C – 2V
0 to 1 m (3.28 ft.)	× (cable less than 1m (3.28 in.) in length cannot be used.)			
1 (3.28 ft.) to 5 m (16.4 ft.)	○	○	○	○
5 (16.4 ft.) to 13 m (42.65 ft.)	○	○	×	×
13 (42.65 ft.) to 17 m (55.78 ft.)	○	○	○	○
17 (55.78 ft.) to 25 m (175.63 ft.)	○	○	×	×
25 (175.63 ft.) to 300 m (984.3 ft.)	○	○	○	○
300 (984.3 ft.) to 500 m (1640.5 ft.)	×	○	×	○

○: Allowed ×: Not allowed

2) If there is a possibility of adding more stations to expand the existing system, the cables should be installed by considering restriction 1) mentioned above in advance.
3) When using a repeater module (models A6BR10 or A6BR10-DC), use the station-to-station cable length for "10 to 33" stations, regardless of the number of stations connected or the number of repeater modules.

(b) Cable installation precautions

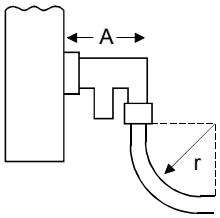
1) Install the coaxial cables at least 100 mm (3.94 in.) away from other power cables and control cables.
2) Consider to use double-shielded coaxial cables in locations where there is excessive noise.



5C-2V connector plug can be applied to double-shielded coaxial cable. Connect the plug to the coaxial cable inside the double-shielded coaxial cable.
Ground the shielded section, external part of the double-shielded coaxial cable, as shown above.

(c) When connecting a coaxial cable, the following restrictions on the bending radius must be observed.

Cable type	Allowable bending radius r [mm (in.)]	Connector A (mm (in.))
3C – 2V	23 (0.91)	55 (2.17)
5C – 2V	30 (1.18)	



(d) Do not pull any of the connected coaxial cables.
This may cause a faulty contact and cable disconnection, or damage the Q80BD-J71BR11.

(e) In the coaxial bus type network system be sure to connect terminal resistors in both end terminals in the network.

(f) There is a possibility that of a white oxidation product forming on the type F connector due to the use environment, but it does not occur on the portions that are fitted together, so functionally, there will be no problem.

(g) When attaching or detaching the coaxial cable to/from the module, make sure to power off the personal computer.

(2) Cable connection

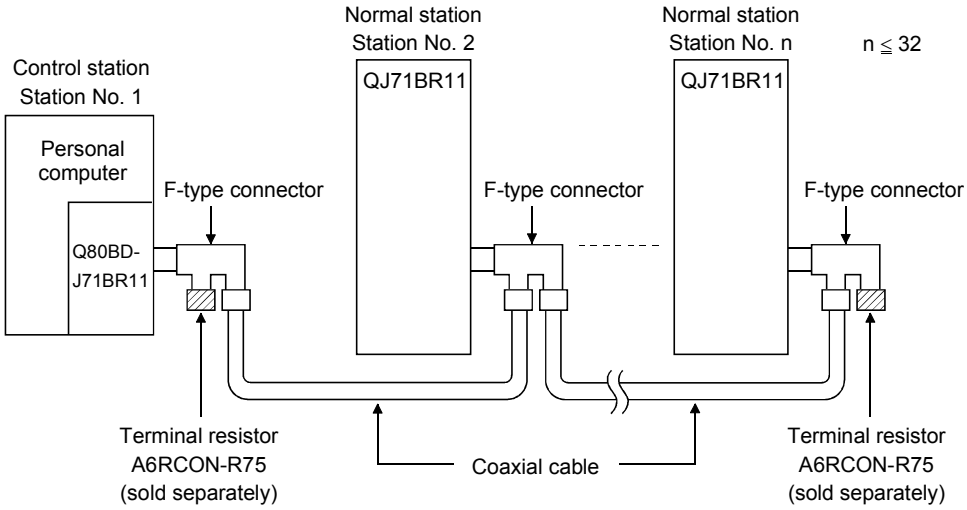
(a) Connection method

Connect the coaxial cable as shown below.

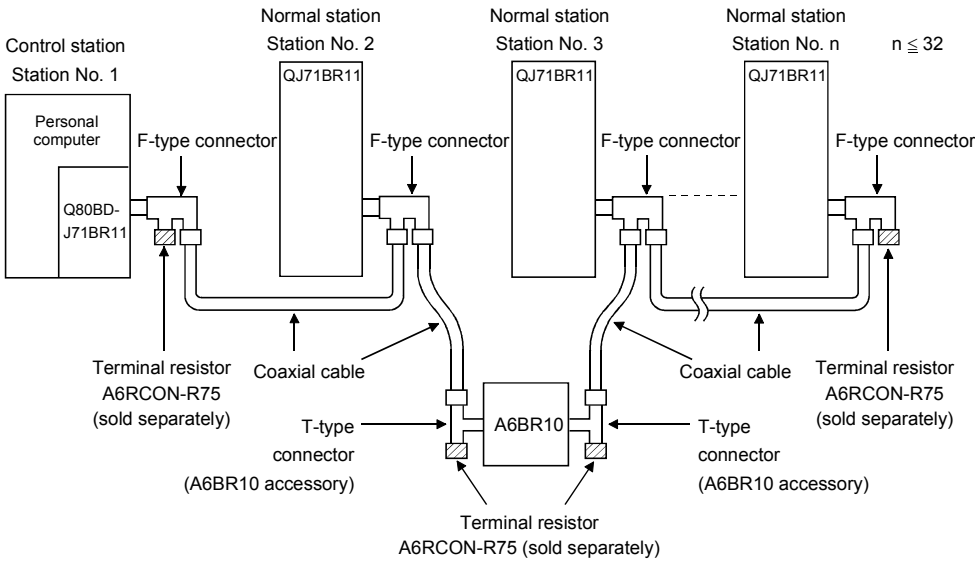
Always install a terminal resistor (sold separately: A6RCON-R75) to the stations connected at both ends.

The F-type connector comes with the Q80BD-J71BR11.

1) Without a repeater module



2) With a repeater module (series connection)

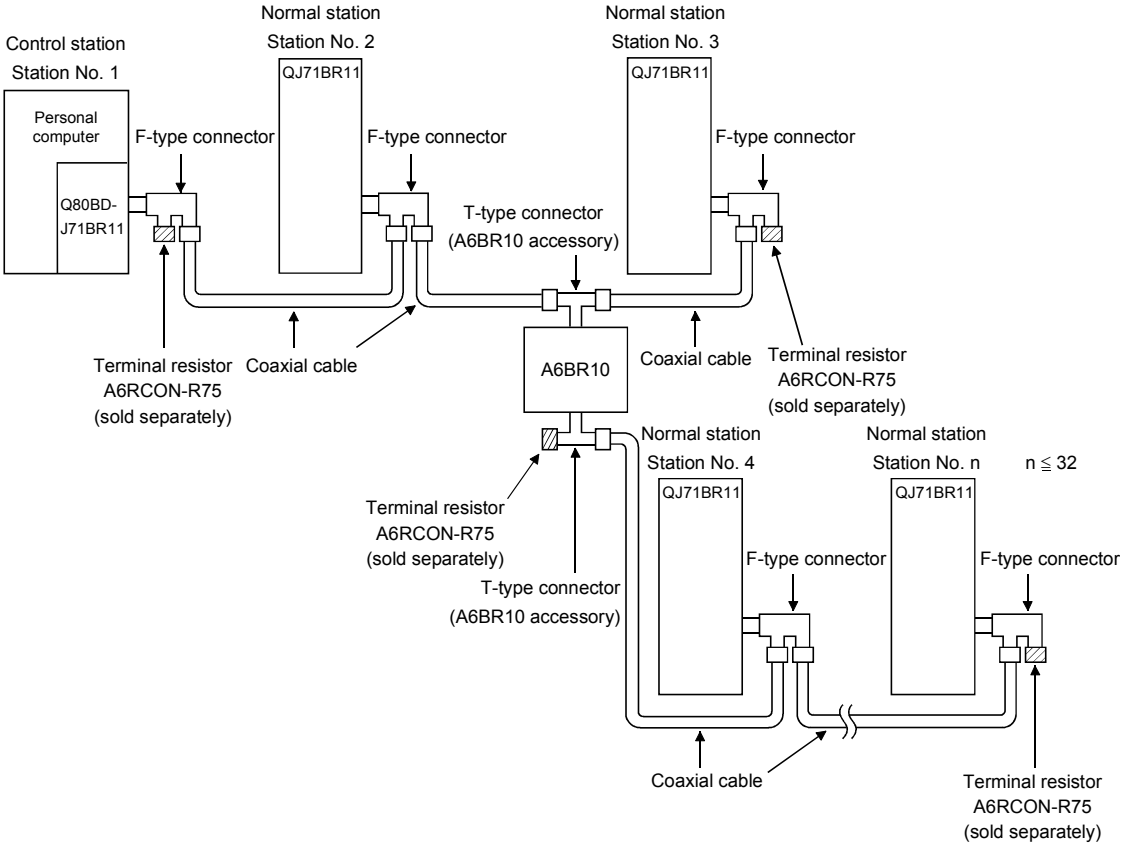


REMARK

For details about the repeater module (A6BR10), see the following user's manual attached to the product:

Model A6BR10/A6BR10-DC MELSECNET/10 Coaxial Bus System Repeater Module User's Manual (IB-66499)

3) With a repeater module (branch connection)

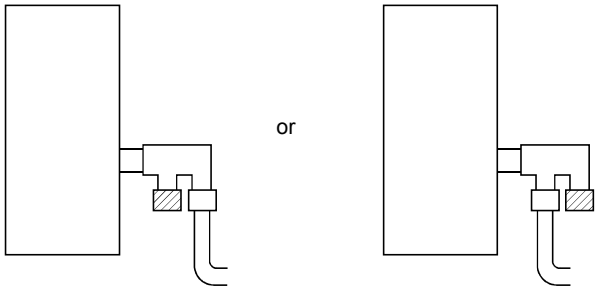


POINT

(1) By setting stations that will be connected in future (stations that are included in the number of stations but not actually connected) as reserved stations, a communication error can be prevented and the link scan time will not be affected.

(2) The two connectors of the F-type connector are not dedicated to IN and OUT. A coaxial cable can be connected to either of them.

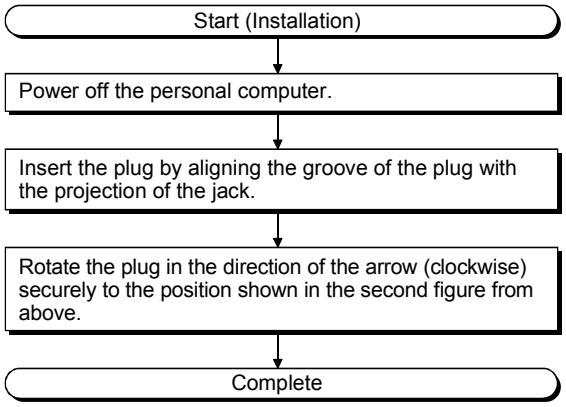
(3) A terminal resistor can be placed on either side of the F-type connector.

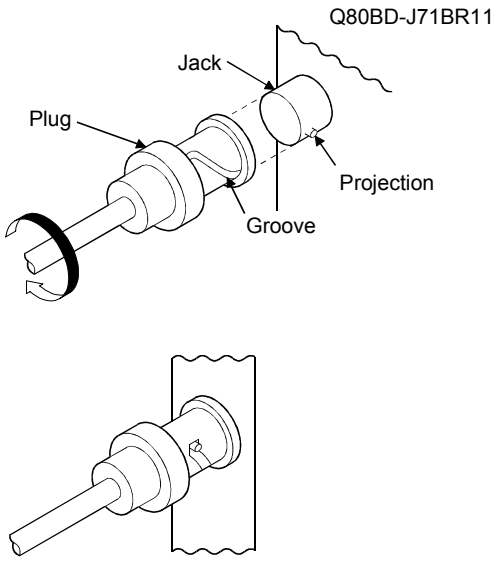


6 - 13

(b) Installing the coaxial cable

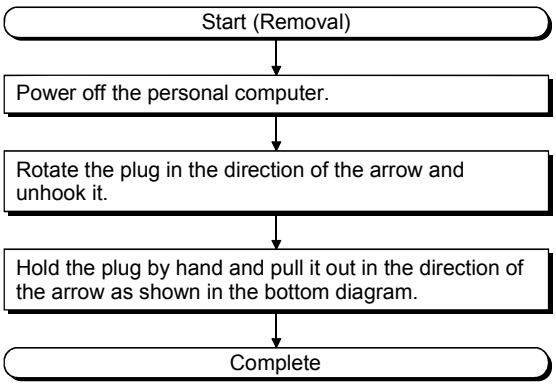
The following shows how to install the coaxial cable:

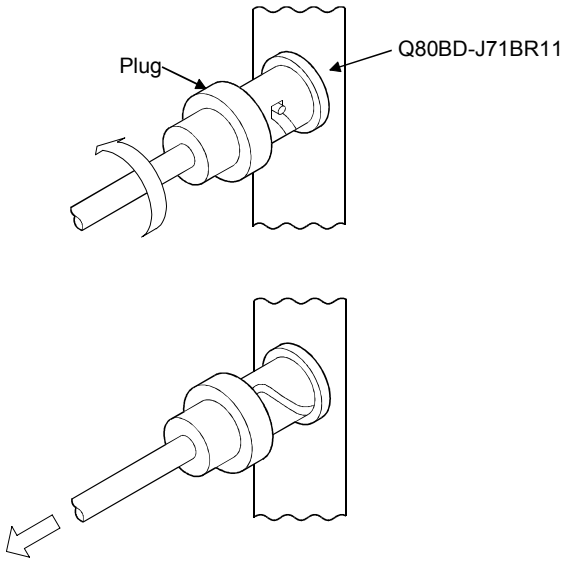

Start (Installation)
Power off the personal computer.
Insert the plug by aligning the groove of the plug with the projection of the jack.
Rotate the plug in the direction of the arrow (clockwise) securely to the position shown in the second figure from above.
Complete



(c) Removing the coaxial cable

The following shows how to remove the coaxial cable:


Start (Removal)
Power off the personal computer.
Rotate the plug in the direction of the arrow and unhook it.
Hold the plug by hand and pull it out in the direction of the arrow as shown in the bottom diagram.
Complete



(d) Terminal reisistor

Coaxial bus system needs the terminal resistor at the both ends of the network.

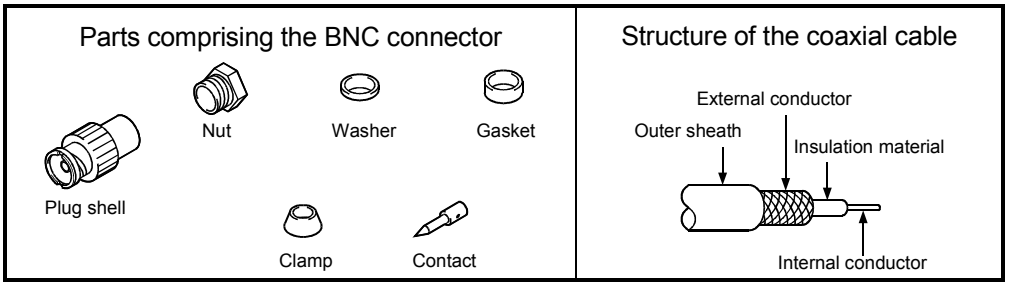
The user need to arrange the terminal resistor (A6RCON-R75) as it is not included in Q80BD-J71BR11.

6.4.3 Connecting the connector for the coaxial cable

The following section explains how to attach the BNC connector (connector plug for the coaxial cable) to the cable.

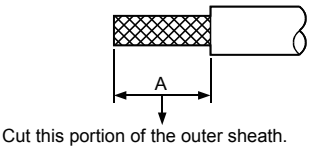
(1) Structure of the BNC connector and coaxial cable

The following shows the structure of the BNC connector and coaxial cable.



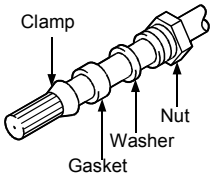
(2) How to attach the BNC connector and the coaxial cable

(a) Cut off the outer sheath of the coaxial cable to the length shown in the diagram below.

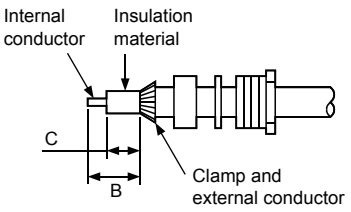


Cable	A
3C-2V	15mm (0.59 in.)
5C-2V, 5C-2V-CCY	10mm (0.39 in.)

(b) Pass the nut, washer, gasket and clamp over the coaxial cable as shown below and unfasten the external conductor.

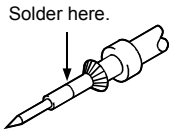


(c) Cut the external conductor, insulation material and internal conductor to the dimensions shown below. However, cut the external conductor to the same dimension as the tapered section of the clamp and smooth it down to the clamp.

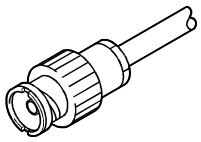


Cable	B	C
3C-2V	6mm (0.24 in.)	3mm (0.12 in.)
5C-2V, 5C-2V-CCY	7mm (0.28 in.)	5mm (0.20 in.)

(d) Solder the contact to the internal conductor.



(e) Insert the connector assembly in (d) into the plug shell and screw the nut into the plug shell.



REMARK

(1) Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

(2) Before handling the coaxial cable connector, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may cause failure of the MELSECNET/H board.

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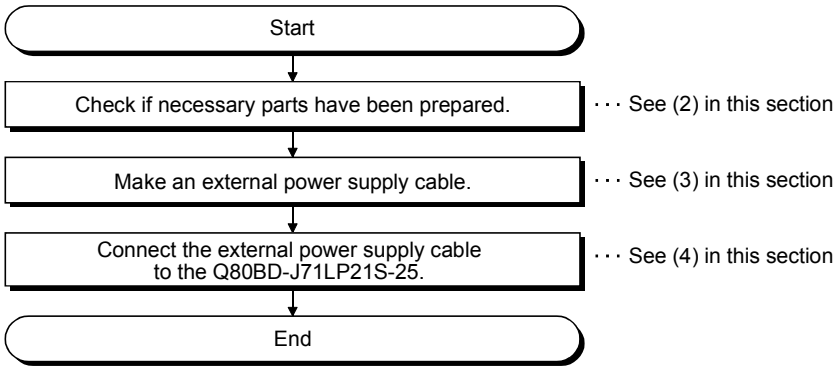
6.4.4 External power supply cable wiring

This section explains how to connect the external power supply cable to the Q80BD-J71LP21S-25.

(1) Connection steps

Connect the external power supply cable to the Q80BD-J71LP21S-25 in the following steps:


Start
Check if necessary parts have been prepared.
··· See (2) in this section
Make an external power supply cable.
··· See (3) in this section
Connect the external power supply cable to the Q80BD-J71LP21S-25.
··· See (4) in this section
End

(2) Parts and tool required for making an external power supply cable

To make an external power supply cable, the following parts and a tool are required.

(a) Connector set (Accessory)

Check that the following parts are contained in the connector set supplied with the product.

Parts	Model	Applicable cable size	Quantity
Connector	1-178288-3	—	1
Contacting pin	175218-2	AWG#20-16	3 (1 spare)

(b) Cable

Use an external power supply cable with heat-resistant vinyl sheath of 0.50 to 1.25mm^2 [AWG 20 to 16].

(c) Tool

Be sure to use the following specified tool.

Model	Applicable cable size	Inquiry
91558-1	AWG#20-16	Tyco Electronics

(3) Making external power supply cable

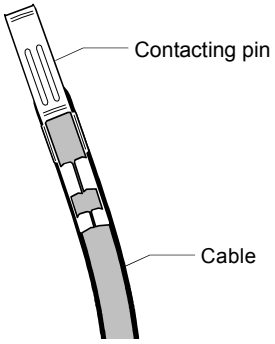
Make an external power supply cable as follows:

(a) Crimping to the contacting pin

Using a crimping tool, crimp the cable and contacting pin.
Set the contacting pin and cable in the grooves of the crimping tool and squeeze the handle tightly.
For details, refer to the instructions of the crimping tool.

(b) Check the crimped condition

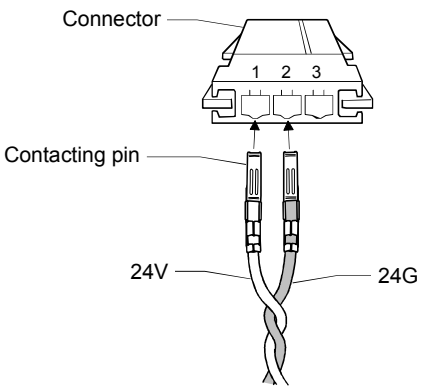
Check if the cable (including a part of the sheath) is evenly crimped to the contacting pin.
If only wire part is crimped and not the sheath part, or if the cable is stuck out, the cable can be cut off or malfunction may occur.



(c) Connecting to the connector

According to the following pin assignment, fully insert the crimped cable to the connector until a click is heard.

Pin No.	Description
1	24V
2	24G
3	Open



(4) Connecting external power supply cable to board

Properly insert the completed external power supply cable to the external power supply cable connector of the Q80BD-J71LP21S-25 until a click is heard.
Keep the external power supply cable away from the main circuit cable, power cables and/or load cables connected to other than programmable controllers. (Ensure a distance of 100mm (3.94 in.) between them.)

POINT
Be sure to twist the external power supply cable.

6.5 Standalone Check of the MELSECNET/H Board (Offline Tests)

Before executing the data link operation, check the MELSECNET/H board and the cables.
Select a test item using the mode setting switch on the "Board information" screen in the MNETH Utility.
The following three test are available for the offline tests:

(1) Self-loopback test

This test checks the hardware of the internal circuits, including the send/receive circuit of the MELSECNET/H board, as well as the cables.

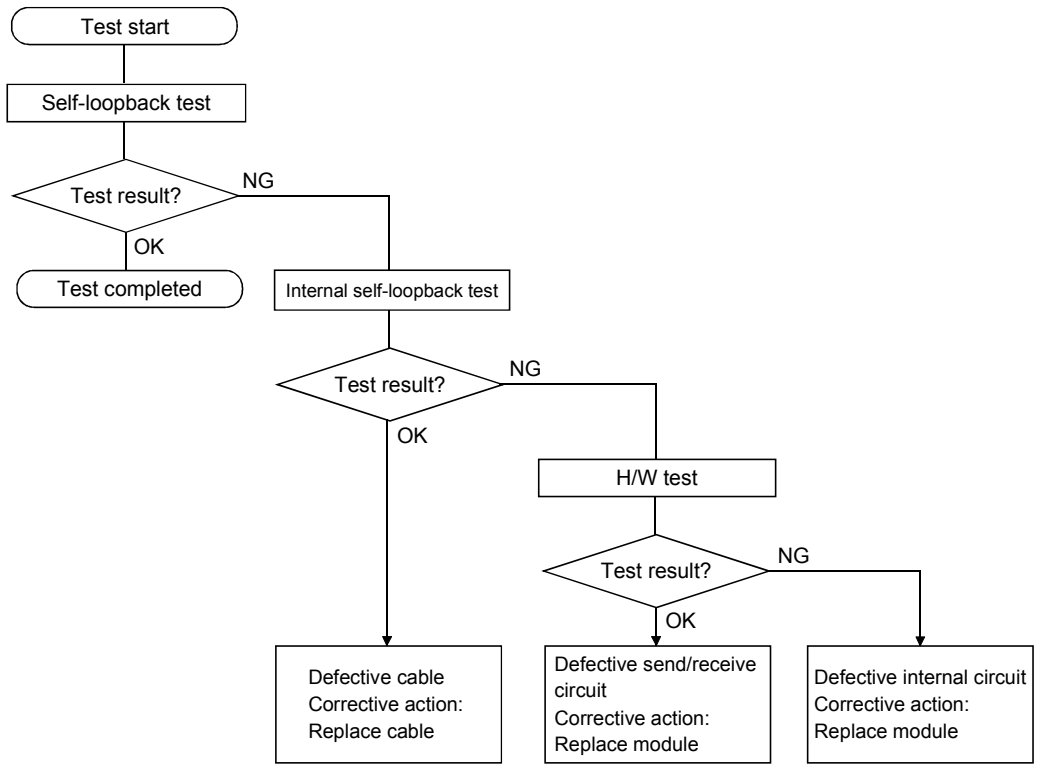
(2) Internal self-loopback test

This test checks the hardware of the internal circuits, including the send/receive circuit of the MELSECNET/H board.

(3) Hardware test

This test checks the hardware inside the MELSECNET/H board.

Flow of offline tests



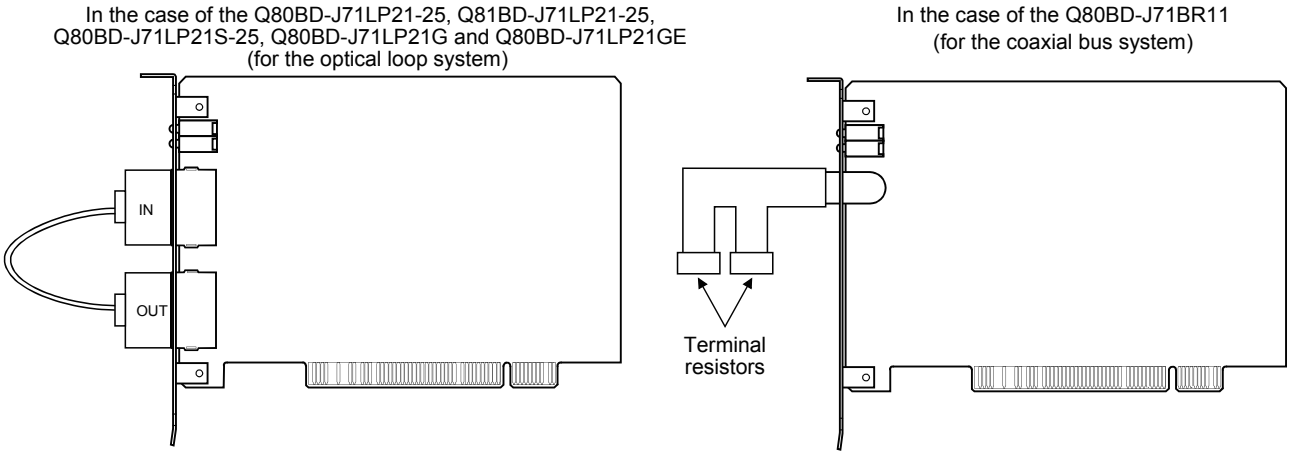
REMARK

The data link operation cannot be executed normally if at least one station is placed in the test mode (offline) during data linking (online).

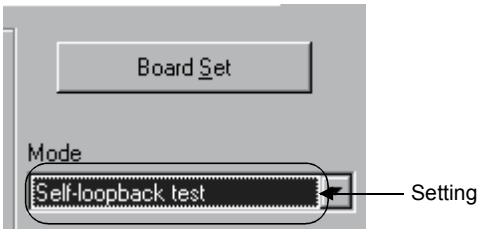
6.5.1 Self-loopback test

In this section, a check of the hardware, including the MELSECNET/H board itself, the transmission and reception lines in the transmission system and the cable, is conducted.

(1) Connect optical fiber cables to the IN and OUT connectors of the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE.
In the case of the Q80BD-J71BR11 (for the coaxial bus system), connect terminal resistors to the two Type F connectors.


In the case of the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE (for the optical loop system)
IN
OUT
In the case of the Q80BD-J71BR11 (for the coaxial bus system)
Terminal resistors

(2) Set the mode setting in the "Board Information" screen of the MNETH Utility on "Self-loopback test. "



(3) Click the Board Set button in the "Board Information" screen of the MNETH utility to run the self-loopback test, checking the LED status in the "Board Information" screen to confirm the execution state.
T. PASS blinks during the test.
If T. PASS blinks 20 times and ERROR LED does not blink, the test is completed normally.
Also, if the test ends abnormally, the ERROR LED will blink as shown below to indicate the relevant error information.

(a) Optical Loop System
(Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE)

1) "TIME" LED lights up
- The forward loop cable is broken.
- The forward loop's transmission side and reception side cables are not connected.

2) "DATA" LED lights up
- The reverse loop cable is broken.
- The reverse loop's transmission side and reception side cables are not connected.

3) The "CRC", "OVER" and "AB.IF" LEDs light up on the F.LOOP and R.LOOP sides
- The cable is defective.

4) "UNDER" LED lights up
- Hardware error.
- The cable was disconnected during the test.
- The cable was broken during the test.

(b) Coaxial Bus System (Q80BD-J71BR11)

1) "TIME" LED lights up
- The connector is disconnected.

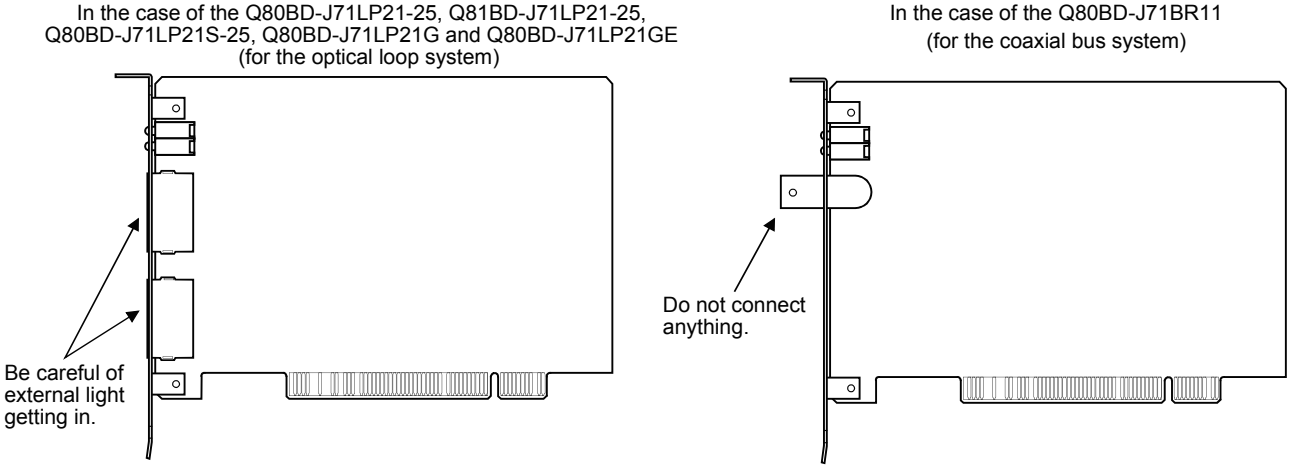
2) The "CRC", "OVER" and "AB.IF" LEDs light up on the F.LOOP and R.LOOP sides
- The connector is defective.

3) "DATA" and "UNDER" LED lights up
- Hardware error.
- The connector was disconnected during the test.

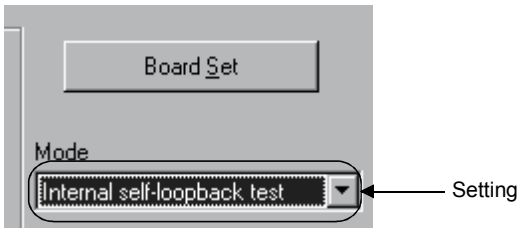
6.5.2 Internal self-loopback test

In this section, a check of the hardware, including the transmission and reception lines in the transmission on the MELSECNET/H board itself, is conducted.

(1) Optical fiber cables are not connected to the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE (for the optical loop system). However, be careful that no external light enters from outside the connectors.
In the case of the Q80BD-J71BR11 (for the coaxial bus system), do not connect terminal resistors to the two Type F connectors.


In the case of the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE (for the optical loop system)
In the case of the Q80BD-J71BR11 (for the coaxial bus system)
Be careful of external light getting in.
Do not connect anything.

(2) Set the mode setting in the "Board Information" screen of the MNETH utility on "Internal self-loopback test."



(3) Click the Board Set button in the "Board Information screen of the MNETH utility to run the Internal self-loopback test, checking the LED status in the "Board Information" screen to confirm the execution state.
T. PASS blinks during the test.
If T. PASS blinks 20 times and ERROR LED does not blink, the test is completed normally.
Also, if the test ends abnormally, the ERROR LED will blink as shown below to indicate the relevant error information.

(a) Optical Loop System
(Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE)

1) The "CRC", "OVER", "AB.IF", "TIME", "DATA" and "UNDER" LEDs light up.
- Hardware error.

(b) Coaxial Bus System (Q80BD-J71BR11)

2) The "CRC", "OVER", "AB.IF", "TIME", "DATA" and "UNDER" LEDs light up.
- Hardware error.

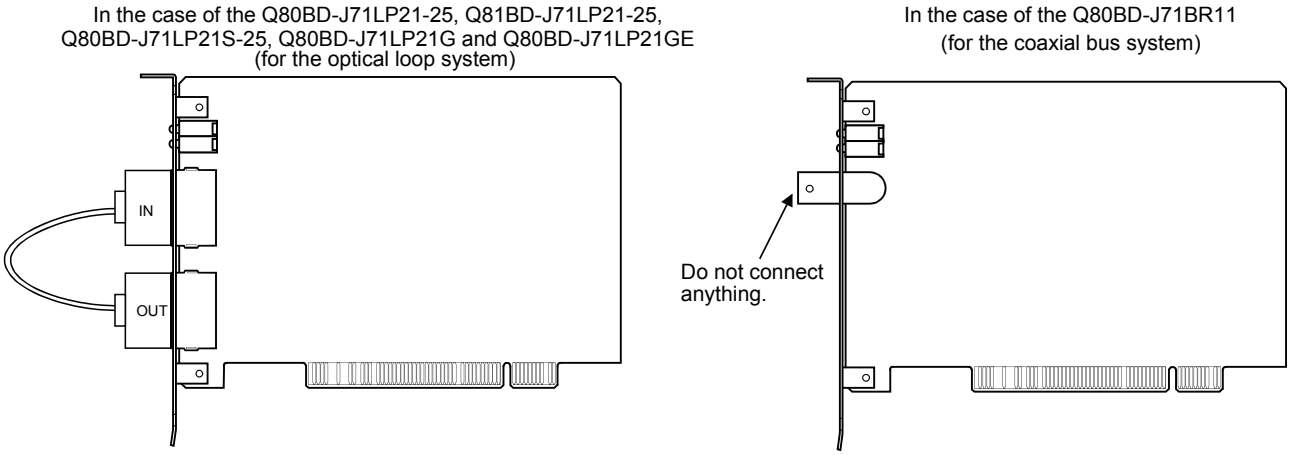
REMARK

If an error occurs in the coaxial bus system, the "M/S.E" LED or "PRM.E" LED may light up besides the "CRC", "OVER", "AB.IF", "TIME", "DATA" and "UNDER" LEDs lighting up.
When requesting repairs of the MELSECNET/H board, be sure to inform the service technician of the LED lighting state.

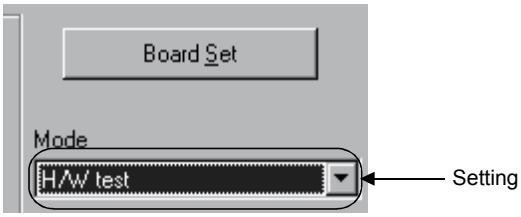
6.5.3 H/W test

This test checks the internal hardware on the MELSECNET/H board.

(1) Connect the optical fiber cables to the IN and OUT sides of the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE (for the optical loop system).
In the case of the Q80BD-J71BR11 (for the coaxial bus system), do not connect a Type F connector or any terminal resistors.


In the case of the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G and Q80BD-J71LP21GE (for the optical loop system)
IN
OUT
In the case of the Q80BD-J71BR11 (for the coaxial bus system)
Do not connect anything.

(2) Set the "H/W test" in the mode settings in the "Board Information" screen of the MNETH utility.



(3) Click the Board Set button in the "Board Information" screen in the MNETH utility to run the H/W test, and check the execution state by the status of the LED's in the "Board Information" screen.
T. PASS blinks during the test.
If T. PASS blinks 20 times and ERROR LED does not blink, the test is completed normally.
Also, if the test ends abnormally, the ERROR LED will blink as shown below to indicate the relevant error information.

(a) Both the optical loop system (Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE) and the coaxial bus system (Q80BD-J71BR11) in common
If the following LED's light up, it means that the corresponding error has occurred, so replace the MELSECNET/H board.
1. "CRC" LED lights up ·····ROM Check Error
2. "OVER" LED lights up ·····RAM Check Error
3. "AB.IF" LED lights up ·····Timer, interrupt function check error

(b) Optical loop system (Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE) only
1. "TIME" LED lights up ·····Forward loop broken line check error
2. "DATA" LED lights up ·····Reverse loop broken line check error

6.6 Offline Tests

The offline tests check the cable connection status of the network module and MELSECNET/H board.

REMARK

This section explains concerning the MELSECNET/H board.
See the following manuals concerning network module settings.

- Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
- QnA/Q4AR Corresponding MELSECNET/10 Network System Reference Manual

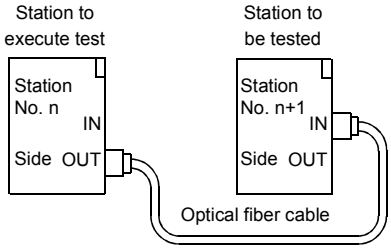
6.6.1 Station to station test

In the station to station test, the hardware of the MELSECNET/H board, network modules and cables between two adjacent stations can be checked.
The following explains how to conduct the station to station test:

(1) Connecting the cable

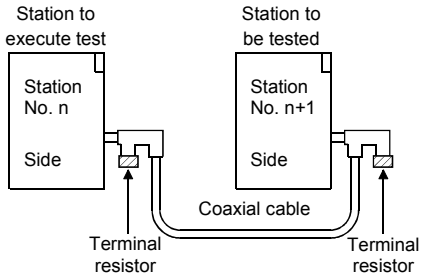
(a) Optical loop system

Connect IN and OUT of network modules, Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G or Q80BD-J71LP21GE with an optical fiber cable.



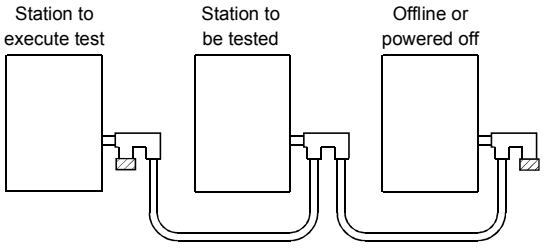
(b) Coaxial bus system

Connect network modules or Q80BD-J71BR11 with a coaxial cable.



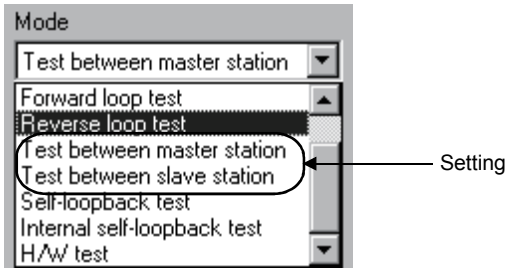
REMARK

Before conducting the station to station test when three or more stations are connected by the coaxial bus system, any stations that are not tested should be switched to offline or powered off.



(2) Test mode settings

In the mode settings in the MNETH utility's "Board Information" screen, set the Station No. n, Station No. n + 1 stations' respective "Test between master station" and "Test between slave station" settings.



(3) Start of inter-station test

Set the mode setting on "Test between master station" or "Test between slave station" and click the Board Set button.

This operation is performed in the order of control station → normal station.

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(4) Click the Board Set button in the "Board Information" screen of the MNETH utility to run the station to station test, checking the LED status in the "Board Information" screen to confirm the execution state.
If T. PASS blinks 20 times and ERROR LED does not blink, the test is completed normally.
Also, if the test ends abnormally, the following ERROR LED or L. ERR. LED will blink as shown below to indicate the relevant error information.

(a) Optical Loop System
(Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE)

1) "TIME" LED lights up
- The forward loop cable is broken.
- The forward loop's transmission side and reception side cables are not connected.

2) "DATA" LED lights up
- The reverse loop cable is broken.
- The reverse loop's transmission side and reception side cables are not connected.

3) The "CRC", "OVER" and "AB.IF" LEDs light up on the F.LOOP and R.LOOP sides
- The cable is defective.

4) "UNDER" LED lights up
- Hardware error.
- The cable was disconnected during the test.
- The cable was broken during the test.

(b) Coaxial Bus System (Q80BD-J71BR11)

1) "TIME" LED lights up
- The connector is disconnected.

2) The "CRC", "OVER" and "AB.IF" LEDs light up on the F.LOOP and R.LOOP sides
- The connector is defective.

3) "DATA" and "UNDER" LED lights up
- Hardware error.
- The connector was disconnected during the test.

6.6.2 Forward loop/Reverse loop test

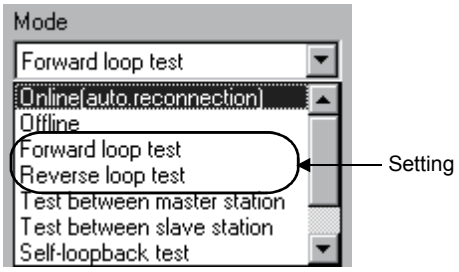
Using the forward loop / reverse loop test you can check the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE network module and cable hardware after all the stations have been connected with optical fiber cable, and can also check if the IN and OUT cables have been connected correctly.

POINT

The forward loop/reverse loop test can be used only when the Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G or Q80BD-J71LP21GE is used as the control station. If it is a normal station, carry out the test from the control station of the network where the normal station is connected.

(1) Test mode settings

If you are performing the forward loop test, set the station executing the forward loop test on "Forward loop test" in the mode settings in the "Board Information" screen of the MNETH utility.
Also, for stations other than the station where the test is being run, treat them as Online.
If you are performing the reverse loop test, set the station executing the forward loop test on "Reverse loop test" in the mode settings in the "Board Information" screen of the MNETH utility.



(2) Start of the test

Set the mode setting on "Forward loop test," "Reverse loop test" or "Online", then click the Board Set button.

This operation is performed in the order of control station → normal station.

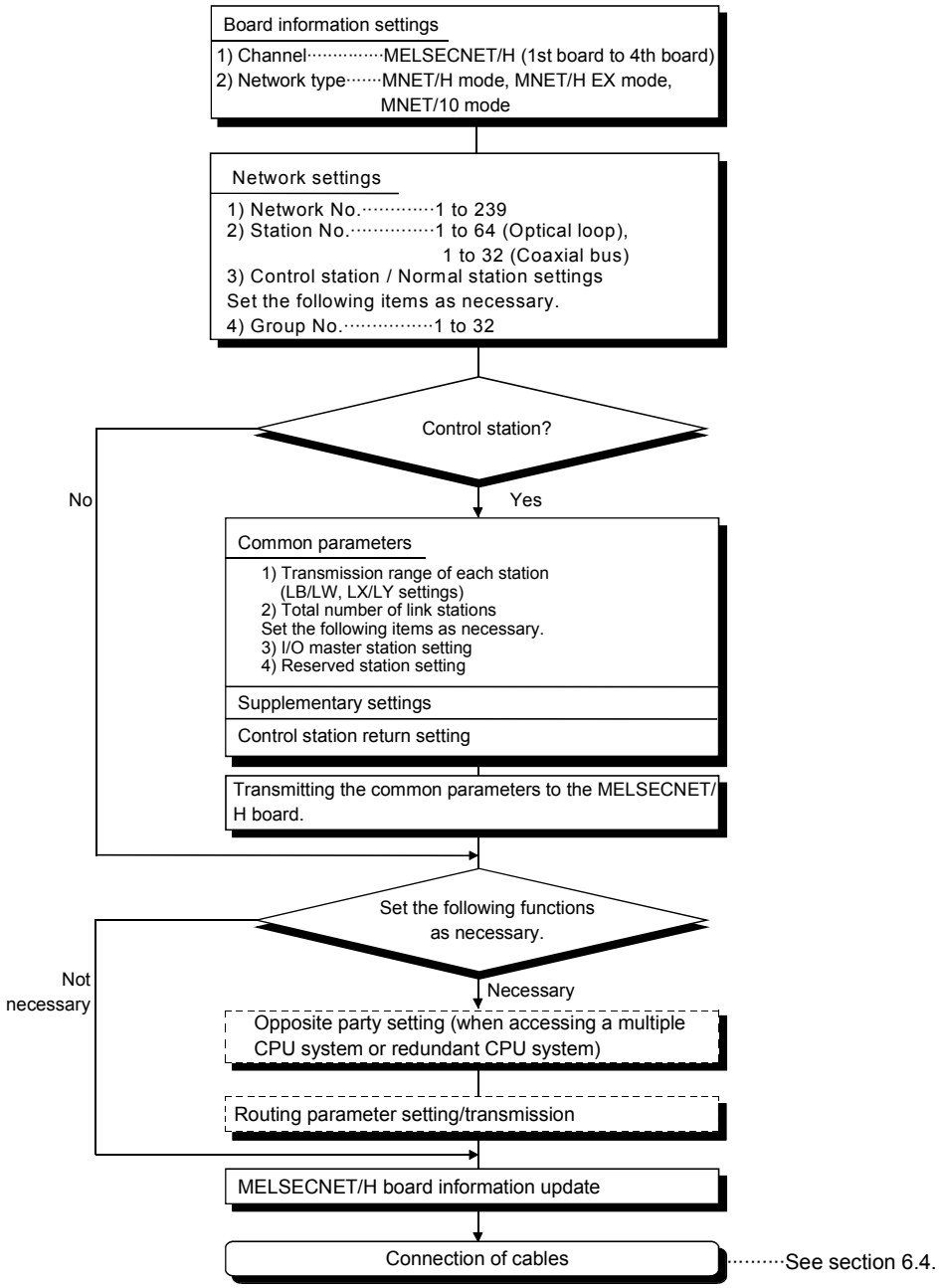
(3) Checking the test results

Click the Board Set button in the "Board Information" screen in the MNETH utility to run the forward loop/reverse loop test, and check the execution state by the status of the LED's in the "Board Information" screen.
If T. PASS blinks 20 times and ERROR LED does not blink, the test is completed normally.
Also, if the test ends abnormally, the ERROR LED or the L.ERR.LED will blink as shown below to indicate the relevant error information.

1) The "TIME," "DATA" and "UNDER" LED's blink on the F.LOOP and R.LOOP sides.
   • The cable or the other station is abnormal and loop back occurred.
2) The "CRC", "OVER" and "AB.IF" LED's blink on the F.LOOP and R.LOOP sides.
   • The cable is defective.
3) The "TIME" and "DATA" LED's blink on the F.LOOP and R.LOOP sides.
   • The wiring is wrong.
   Check and correct the cable connections before and after the station where the error occurred.

7 PARAMETER SETTINGS

It is necessary to set the MELSECNET/H board's parameters using the MNETH utility in order to operate the MELSECNET/H.
In setting of the parameters, after the MELSECNET/H is selected, it can be set even to the details of the application functions.
A flow chart of the settings is shown below.


Board information settings
1) Channel·····MELSECNET/H (1st board to 4th board)
2) Network type·····MNET/H mode, MNET/H EX mode, MNET/10 mode
Network settings
1) Network No.·····1 to 239
2) Station No.·····1 to 64 (Optical loop), 1 to 32 (Coaxial bus)
3) Control station / Normal station settings
Set the following items as necessary.
4) Group No.·····1 to 32
Control station?
No
Yes
Common parameters
1) Transmission range of each station (LB/LW, LX/LY settings)
2) Total number of link stations
Set the following items as necessary.
3) I/O master station setting
4) Reserved station setting
Supplementary settings
Control station return setting
Transmitting the common parameters to the MELSECNET/H board.
Set the following functions as necessary.
Not necessary
Necessary
Opposite party setting (when accessing a multiple CPU system or redundant CPU system)
Routing parameter setting/transmission
MELSECNET/H board information update
Connection of cables
·····See section 6.4.

REMARK

Data links can be executed even if the parameters are not set.
In that case, the MELSECNET/H board operates with the default state displayed in the "Board Information" screen for the channel, network type, network No., station No., control station/normal station settings and group No.
When the network type of the control station is the MELSECNET/H Extended mode, the following condition occurs in a normal station with no parameters set.

In the case of a programmable controller: LINK PARA ERROR occurs.
In the case of a MELSECNET/H board: "L.ERR." LED lights up.

In such a case, set parameters to the normal station.

7.1 Board Information Settings

This sets the channel and network type for the MELSECNET/H board that is being used. Perform the settings in the "Board Information" screen of the MNETH utility.

(1) Channel

Select the MELSECNET/H board for which settings are performed in the MNETH utility.
A maximum of 4 MELSECNET/H boards can be installed in one personal computer. The channels that are assigned to each MELSECNET/H board can be checked by clicking the Channel No. Confirm button in the "Board List" screen.

(2) Network type

The settings in the mode for the network system where the MELSECNET/H board is connected can be changed.

Item	Corresponding network
MNET/H mode, MNET/H EX mode	MELSECNET/H
MNET/10 mode	MELSECNET/10

(3) Precautions

(a) Set an identical network type for stations within the same network.
If any different network type is included, the system does not operate normally.

(b) For the MELSECNET/H Extended mode, use the MELSECNET/H board of ROM version 2X or later and the SW0DNC-MNETH-B of version 11M or later. When a MELSECNET/H board incompatible with the MELSECNET/H Extended mode is used, the system does not operate normally.

(c) When connecting a QnA or A series MELSECNET/10 network module, use it in the MELSECNET/10 mode.
If used in any other mode, the system does not operate normally.

(d) Set a transmission speed matched with that of the network.
When an incorrect transmission speed is set, the system does not operate normally.

7.2 Network Settings

These are the parameters used to build the MELSECNET/H network.
The MELSECNET/H board's network No., station No., control station/normal station setting and group No. are set.

7.2.1 Network No.

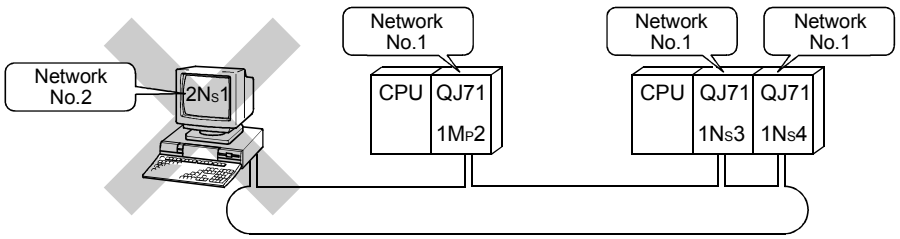
Set the Network No. of the network which the MELSECNET/H board is connected to.
To set the network No, set it in the "Board Information" screen in the MNETH utility.

(1) Valid setting range

1 to 239

(2) Caution

(a) Set the same network No. to all of the devices connected to the same network.



7.2.2 Station No.

Set the station No. of the MELSECNET/H board.
Set the station No. in the "Board Information" screen of the MNETH utility.

(1) Effective setting range

The effective setting range differs depending on the type of network.
- Optical loop system·····1 to 64
- Coaxial bus system·····1 to 32

(2) Caution

(a) Make settings so that the same station No. does not exist in more than one place in the same network.

7.2.3 Control station/Normal station

Set the Control station / Normal station setting on the MELSECNET/H board.
Set the Control station / Normal station setting in the "Board Information" screen of the MNETH utility.

7.2.4 Group No.

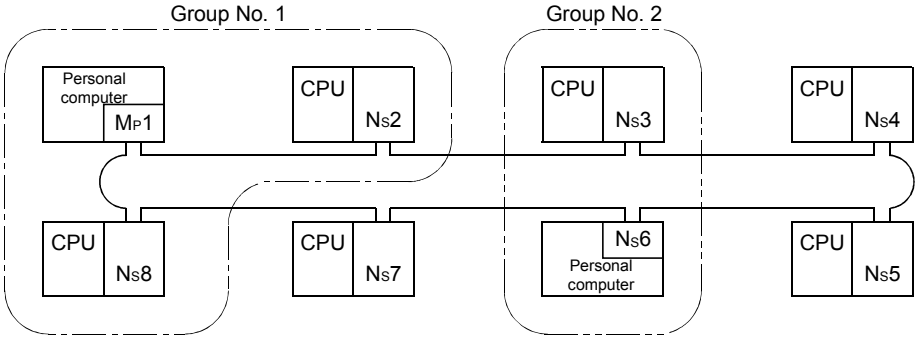
This sets the MELSECNET/H board's group No.
Set the group No. setting in the "Board Information" screen of the MNETH utility.

(1) Valid setting range

0: No group setting
1 to 9: When in the MELSECNET/10 Mode
1 to 32: When in the MELSECNET/H Mode and MELSECNET/H Extended Mode

(2) Cautions

(a) Only one Group No. can be set for 1 station.



7.2.5 Mode setting

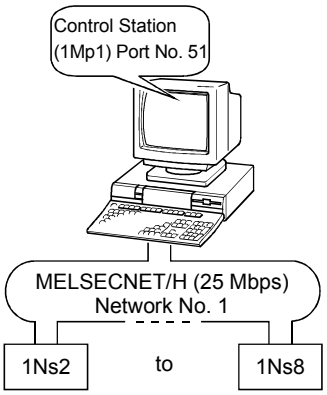
This sets the MELSECNET/H board's operating mode.

Selection item	Content
Online (auto. reconnection)	Normal operation (return to system) is selected. When the system is started up, data communications is started and automatic return to system operations, etc. are carried out.
Offline	Operation stop (disconnecting the station) is selected. Handshake and data communications with other stations is not done.
Forward loop test	The connection state with the forward loop side's optical fiber cable is checked. The hardware test operation is selected. For details, see section 6.6.2, "Forward loop / Reverse loop test."
Reverse loop test	The connection state with the reverse loop side's optical fiber cable is checked. The hardware test operation is selected. For details, see section 6.6.2, "Forward loop / Reverse loop test."
Test between master station	Selects the control station side for performing the hardware test for checking the lines between two stations. For details, see section 6.6.1, "Station to station test."
Test between slave station	Selects the normal station side for performing the hardware test for checking the lines between two stations. For details, see section 6.6.1, "Station to sation test."
Self-loopback test	Selects a hardware test of the MELSECNET/H board itself with the connection cables. For details, see section 6.5.1, "Self-loopback test."
Internal self-loopback test	Selects a hardware test of the MELSECNET/H board itself. For details, see section 6.5.2, "Internal self-loopback test."
H/W test	Selects the internal hardware test for the MELSECNET/H board itself. For details, see section 6.5.3, "H/W test."

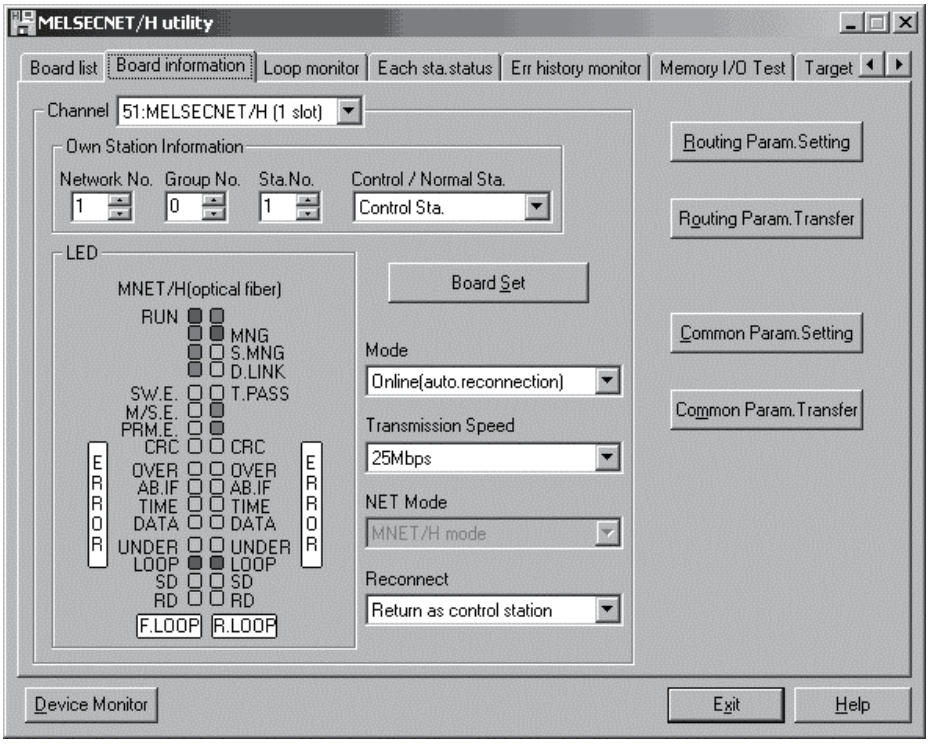
7.2.6 Parameter setting example

An example of setting the MELSECNET/H board parameters is shown below.

(1) System example



(2) Setting screen (Board information screen)



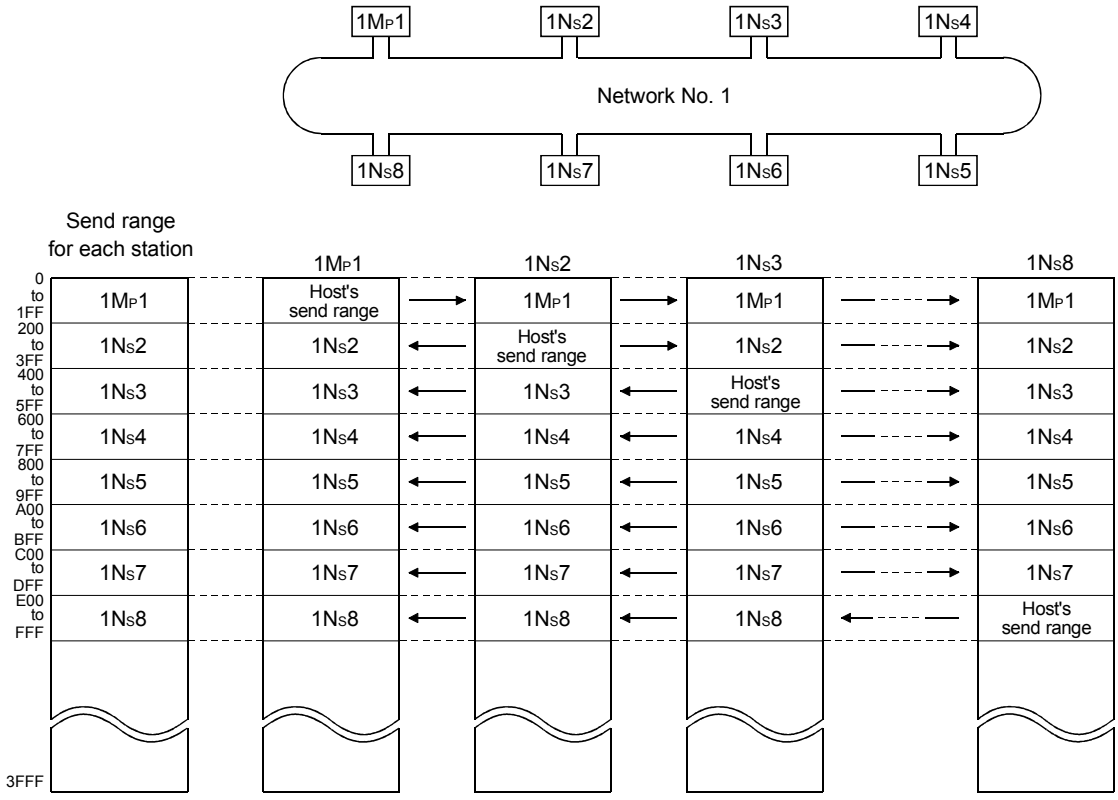
7.3 Common Parameters

The common parameters are used to set the cyclic transmission ranges of LB, LW, LX and LY that can be sent by each station in a single network. The common parameter settings are required only for the control station. The data of the common parameters are sent to the normal stations when the network starts up.

7.3.1 Send range for each station (LB/LW settings)

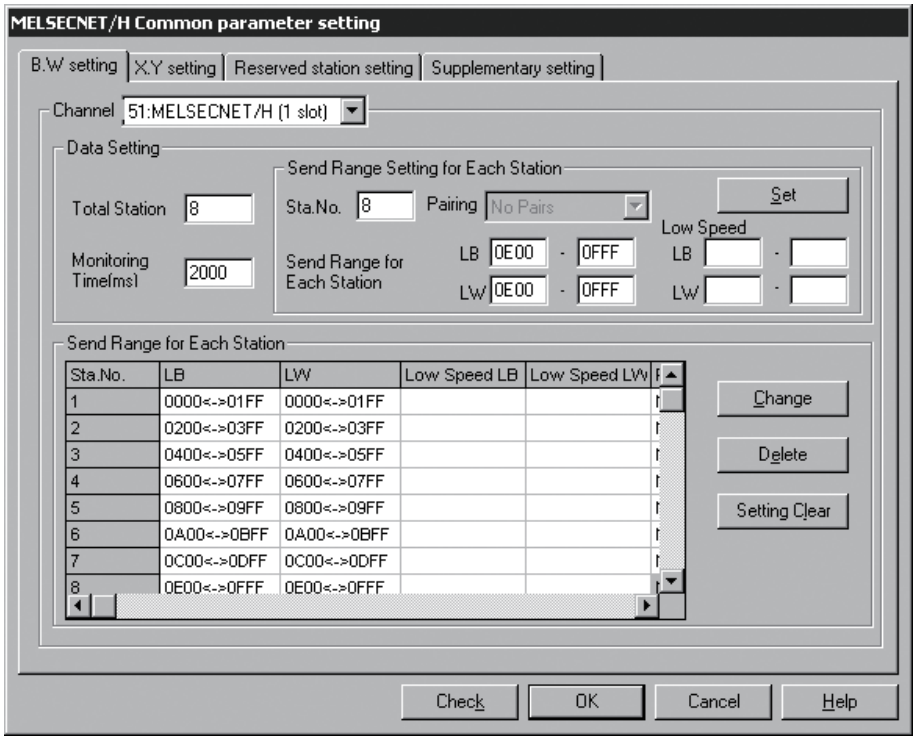
Assign the send ranges of the link devices (LB/LW) for each station in 16 point units for LB (start □□□ 0 to end □□□ F) and in one point unit for LW.
The following example shows send range for each station (LB/LW settings) when each of 512 points is assigned to station numbers 1 to 8.

(1) Setting example



(2) Screen settings (Common parameter setting screen)

Perform the setting of each station's transmission range (LB/LW settings) in the "Common parameter setting" screen in the MNETH utility.

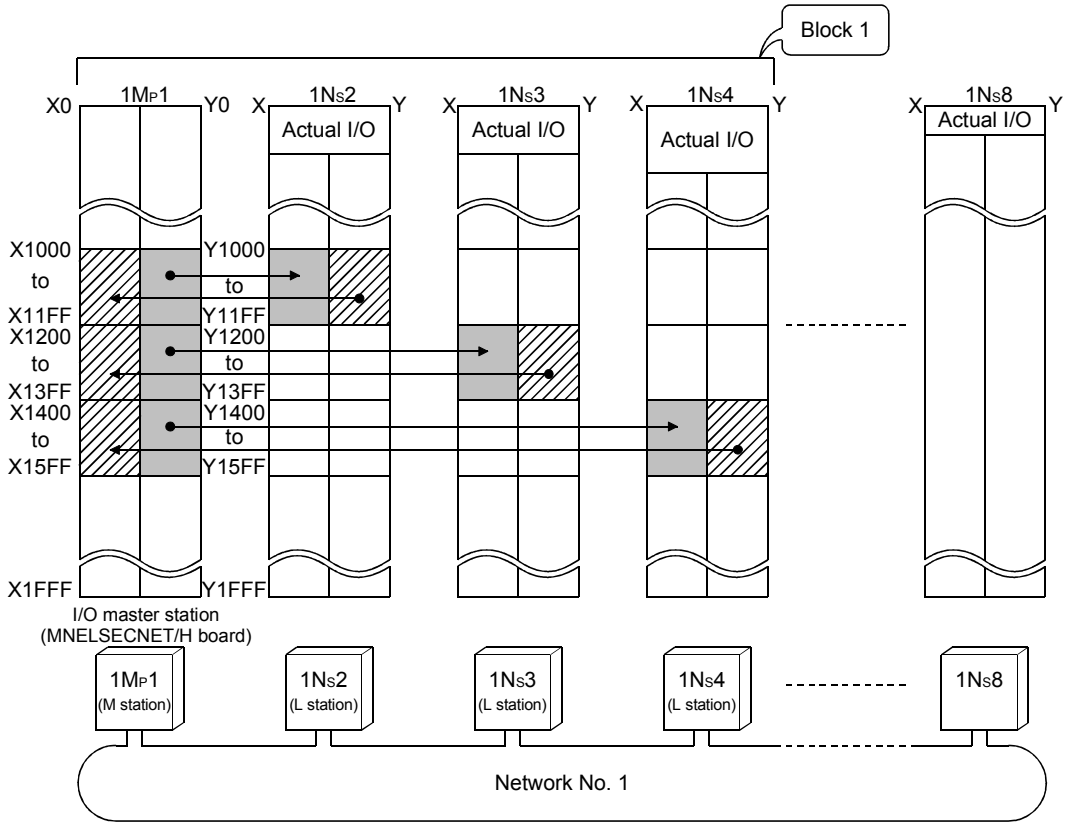


POINT
In order to validate the guarantee of 32-bit data, it is necessary that the number of points in each station's transmission range be a multiple of 20H for LB and a multiple of 2 for LW and that each station's top device No. be set so that the LB is a multiple of 20H and the LW is a multiple of 2. (For details on guaranteeing 32-bit data, see the "Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC Network).)"

7.3.2 Send range for each station (LX/LY settings)

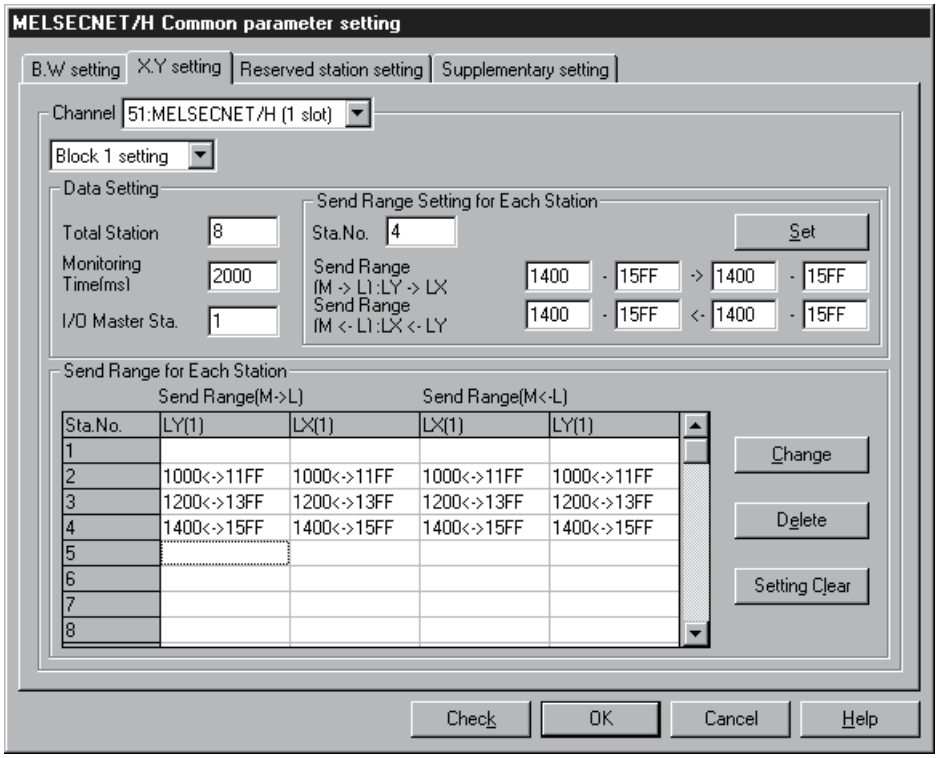
Set send ranges for each station of LX/LY, which represent the amount of data that can be sent by each station in a single network in one (two) block units.
The link devices (LX/LY) between the I/O master station (M station) and other station (L station) are assigned 1:1.
The following example shows send ranges for each station (LX/LY settings) when each of 512 points of link devices (LX/LY) is assigned to station numbers 2 to 4, using station number 1 (host) as the I/O master station of block 1.

(2) Setting example



(2) Screen settings (Common parameter settings)

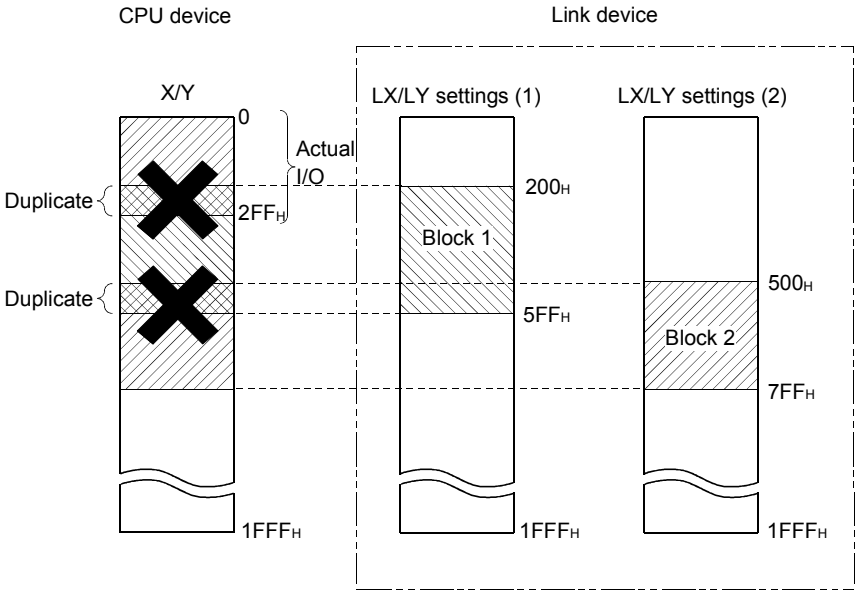
To set the transmission range for each station (LX/LY settings), perform the settings in "Common parameter settings" in the MNETH utility.



(3) Precaution

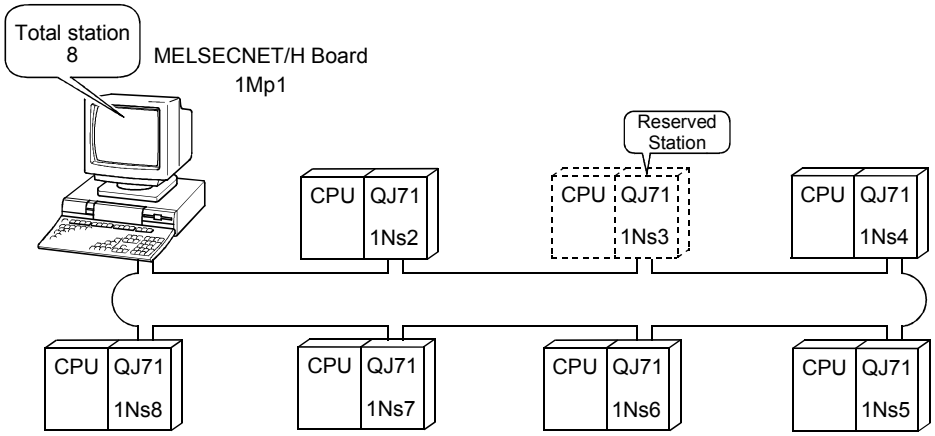
Duplicate link device ranges cannot be assigned to each station between block 1 and block 2.

If the network module is the I/O master station, they must be set not to duplicate with the actual I/O (the range of input/output numbers to which the actual module is installed) of the of the CPU module mounted.



7.3.3 Total station

This sets the total number of control stations, normal stations and reserved stations in a single network.
Set the total number of link stations in the "Common parameter settings" screen in the MNETH utility.



7.3.4 Designation of the I/O master station

The master station (the control station) can be set in each block for 1:1 communication using LX/LY regardless of the station type (either the control station or the normal station).
Each of block 1 and block 2 has one I/O master station, which is set by the send range (LX/LY) of each station in each block.
Specify the I/O master station with the "Common parameter setting" screen of the MNETH utility if the MELSECNET/H board is control station.

7.3.5 Reserved station setting

The reserved station designation function is used to prevent stations to be connected in future (stations that are not actually connected but included in the total number of (slave) stations of a network) from being treated as faulty stations.
The reserved stations do not affect the link scan time; they do not slow down the network even if used as reserved stations.
Specify the reserved station with the "Common parameter setting" screen of the MNETH utility.

7.3.6 Pairing Setting

In the pairing setting, station numbers of network modules composing a redundant CPU system can be set as pairs.

Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

7.4 Supplementary Setting

The supplementary settings are included in the common parameter settings. They can be used when more specific applications are required. The default settings should normally be used.
The supplementary settings (common parameter settings) are required only for the control station. The parameters are sent from the control station to normal stations when the network starts up.
Perform the supplementary settings with the "Common parameter setting" screen of the MNETH utility.

7.5 Control Station Return Setting

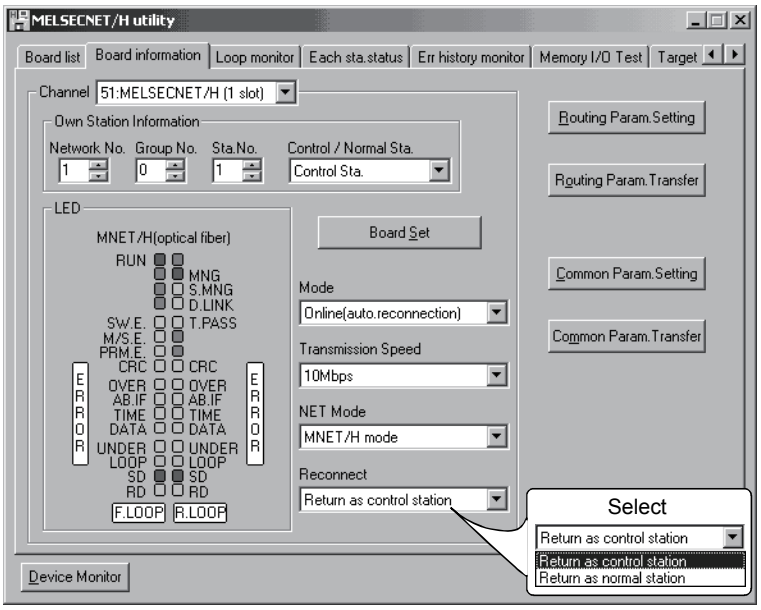
This parameter is used to designate the type of station used by the control station when returning to the network in the control station return control.
Select this parameter to make the control station return as a normal station without stopping the baton pass in the system in operation.
The control station return setting is required only for the control station.

(1) When "Return as control station" is selected (default)

The baton pass (cyclic transmission, transient transmission, etc.) temporarily stops because the control station sends the parameters to the normal stations and returns to the network.

(2) When "Return as normal station" is selected

The control station returns to the network as a normal station, without stopping the baton pass in the network.



REMARK

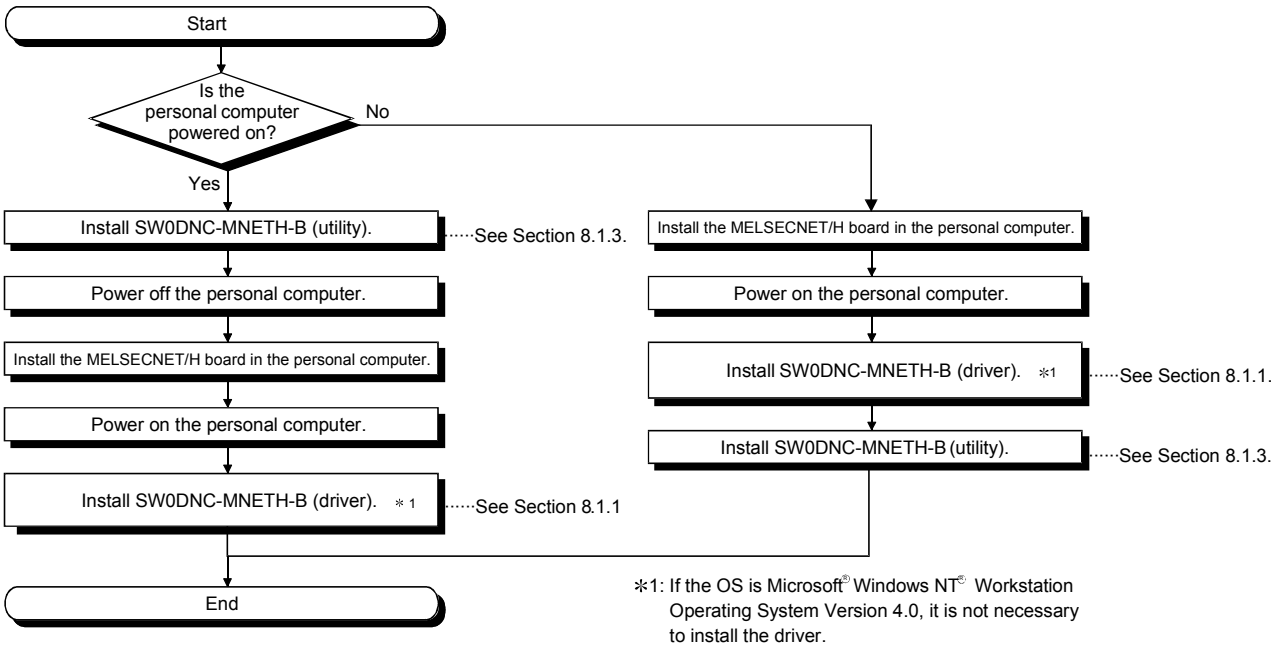
- When "Return as control station" is selected, the network stop time becomes longer because the baton pass is stopped, but the common parameters can easily be changed only by resetting the Board of the control station.
- If "Return as normal station" is selected, the network does not stop because the control station returns to the network without stopping the baton pass.
  However, it is necessary to reset the CPUs of all the stations after changing the common parameters of the control station while the network is in operation.
  If only the board resetting is performed, the MELSECNET/H board (Control station) detects the parameter mismatch error and disconnects it.

8 INSTALLING AND UNINSTALLING THE SOFTWARE PACKAGE

The methods for installing and uninstalling the software package, and copying the registered icons to a FD and installing them are explained.

8.1 Installation

This explains the method for installing the software package.


Start
Is the personal computer powered on?
No
Yes
Install SW0DNC-MNETH-B (utility).
See Section 8.1.3.
Power off the personal computer.
Install the MELSECNET/H board in the personal computer.
Power on the personal computer.
Install SW0DNC-MNETH-B (driver). *1
See Section 8.1.1
Install the MELSECNET/H board in the personal computer.
Power on the personal computer.
Install SW0DNC-MNETH-B (driver). *1
See Section 8.1.1.
Install SW0DNC-MNETH-B (utility).
See Section 8.1.3.
End
*1: If the OS is Microsoft® Windows NT® Workstation Operating System Version 4.0, it is not necessary to install the driver.

8 - 1

8.1.1 Installing the Driver

This explains installing the driver for the MELSECNET/H board.

POINT

(1) When using the following Operating systems, logon as a user who has administrator authority.
- Windows Vista®
- Windows Server® 2003 R2
- Windows® XP Professional
- Windows® 2000 Professional

(2) Disassociate all applications registered in the startup procedure, then execute installation after restarting Windows® .

(3) Make sure to close other applications running on Windows® (including resident software such as antivirus software) before installation.

(4) The installer may not work normally because the update program of operating system or other companies' software such as Windows Update and java update may start automatically. Please install the driver after changing the setting of the update program not to start automatically.

(5) If you are using Windows NT® Workstation 4.0, it is not necessary to install the MELSECNET/H board driver.

(6) On Operating System of Windows® XP Service Pack2 or later, the confirmation screen for connection to Windows Update may be displayed.

(1) When Microsoft® Windows® 2000 Professional Operating System is used

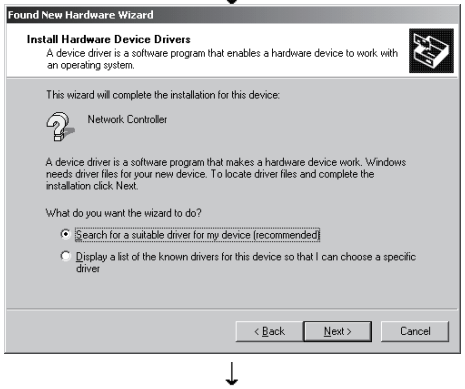
This section explains installing the driver for the MELSECNET/H board when Windows® 2000 Professional is used.

1) Mount the MELSECNET/H board to the personal computer, power on the personal computer to start Windows® 2000 Professional .

2) When the screen shown left is displayed, click the Next> button.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

↓

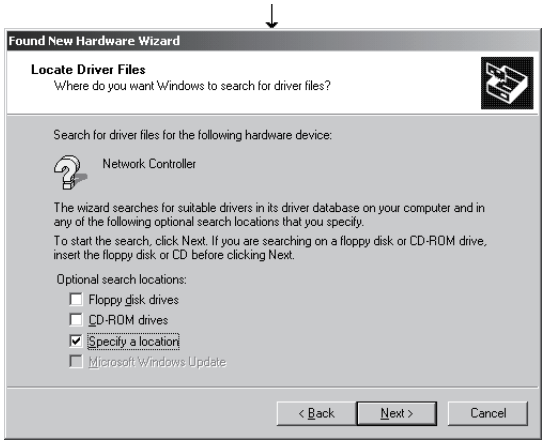

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Network Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device [recommended]
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

3) When the screen shown left is displayed, select "Search for a suitable driver for my device [recommended]," then click the Next> button.

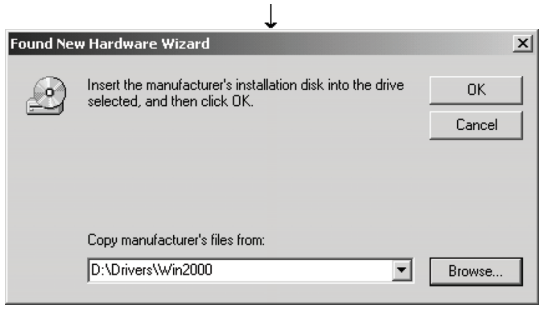
↓

(To the next page)

(From the previous page)

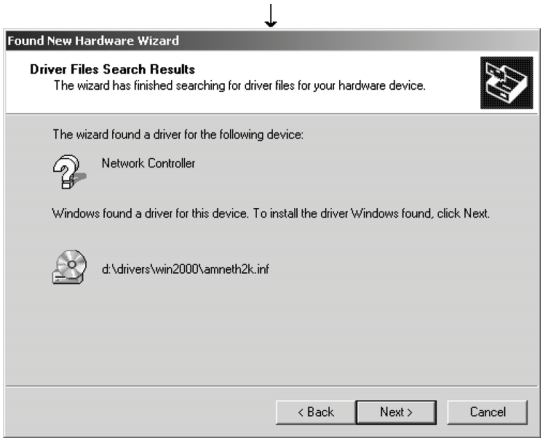

Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Network Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

4) When the screen shown left is displayed, select "Specify a location" and click the Next> button.

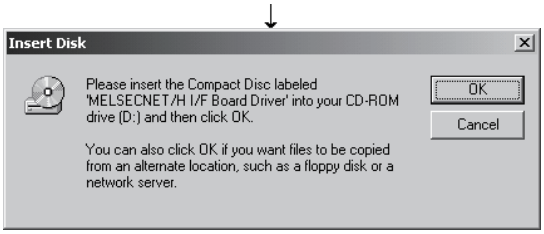


5) When the screen shown left is displayed, enter "D:\Drivers\Win2000" for "Copy manufacturer's files from." Insert CD-ROM into the CD-ROM drive, then click the OK button.

("D:" explained in the above indicates the name of the CD-ROM drive. Enter the name of the CD-ROM drive to be used.)


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Network Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\drivers\win2000\amneth2k.inf
< Back
Next >
Cancel

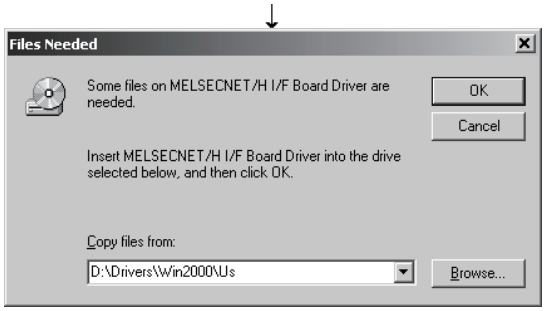
6) When the screen shown left is displayed, click the Next> button.


Insert Disk
Please insert the Compact Disc labeled 'MELSECNET/H I/F Board Driver' into your CD-ROM drive (D:) and then click OK.
OK
Cancel
You can also click OK if you want files to be copied from an alternate location, such as a floppy disk or a network server.

7) When the screen shown left is displayed, insert the CD-ROM to the personal computer, then click the OK button.

(To the next page)

(From the previous page)


Files Needed
Some files on MELSECNET/H I/F Board Driver are needed.
OK
Cancel
Insert MELSECNET/H I/F Board Driver into the drive selected below, and then click OK.
Copy files from:
D:\Drivers\Win2000\Us
Browse...

8) When the screen shown left is displayed, input "D:\Drivers\Win2000\Us" for the "Copy files from:" (As explained above, "D:" is the name of the CD-ROM driver. Input the name of the CD-ROM driver you are using.)
When you are finished inputting the information, click the [OK] button.∗1

∗1: If the installation does not start even if the [OK] button is clicked, click the [Browse…] button and specify "D:\Drivers\Win2000\Us\Amneth2k.sys" directly, then click the OK button.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
PCI MELSECNET/H Controller
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

9) The installation is complete when the screen shown left is displayed.
Click the [Finish] button.

(Complete)

8 - 4

(2) When Microsoft® Windows® XP Professional Operating System or Microsoft® Windows Server® 2003 R2 Operating System is used

This section explains installing MELSECNET/H board driver when Microsoft® Windows® XP Professional Operating System or Microsoft® Windows Server® 2003 R2 Operating System is used.

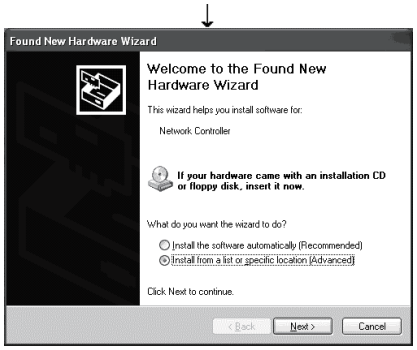
1) Mount a MELSECNET/H board to a PC, and then power on the PC to start Windows® XP Professional.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

2) When the screen shown left is displayed, select "No, not this time" and click the Next> button. ∗1

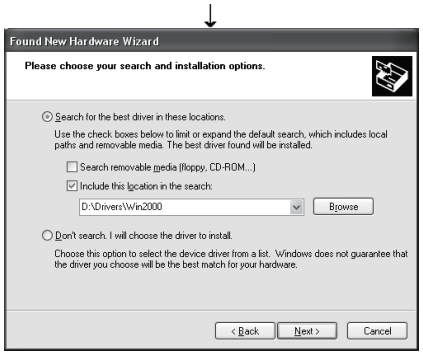
∗1:The screen shown left may not be displayed in some version of service pack applied to the computer's basic software (OS).
If it is not displayed, continue from the next step 3.

↓


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Network Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

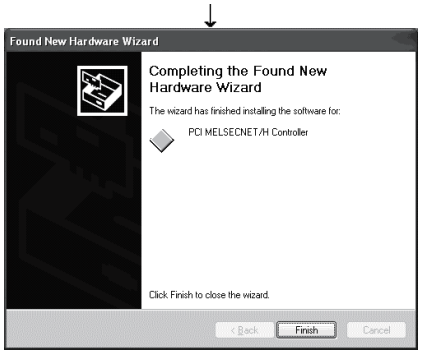
3) When the screen shown left is displayed, select "Install from a list or specific location (Advanced) " and then click the Next> button.

↓


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\Drivers\Win2000
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

4) As the screen shown left is displayed, select "Search for the best driver in these locations".
Check "Include this location in the search" and enter "D:\Drivers\Win2000".
("D:" mentioned above indicates CD-ROM drive name. Make sure to enter the CD-ROM drive name to be used.)
Insert the CD-ROM, and then click the Next> to start the drive installation.

↓



5) When the screen shown left is displayed, this means that the installation is completed.
Click the Finish button.

↓

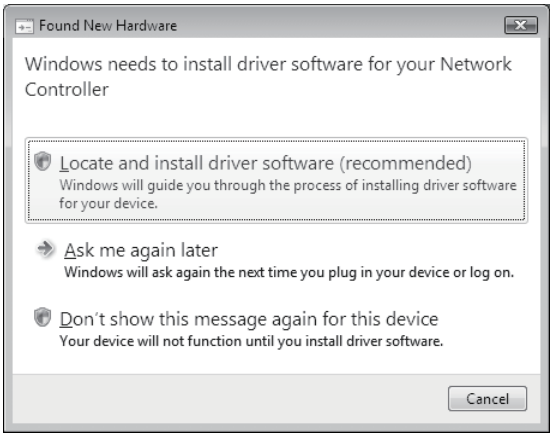
(Complete)

8 - 5

(2) When Microsoft® Windows Vista® Operating System is used

This section explains installing MELSECNET/H board driver when Microsoft® Windows® XP Professional Operating System is used.

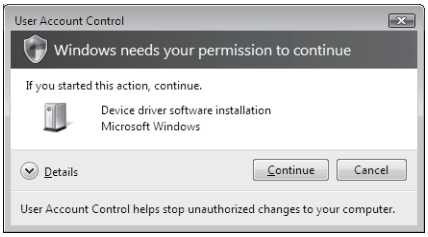
1) Mount a MELSECNET/H board to a PC, and then power on the PC to start Windows Vista® .

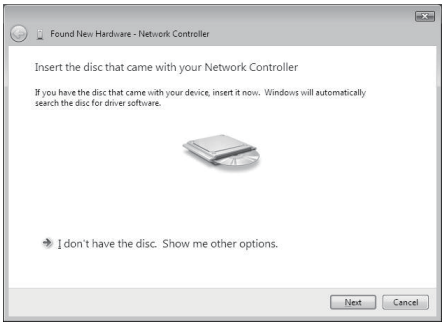

Found New Hardware
Windows needs to install driver software for your Network Controller
Locate and install driver software (recommended)
Windows will guide you through the process of installing driver software for your device.
Ask me again later
Windows will ask again the next time you plug in your device or log on.
Don't show this message again for this device
Your device will not function until you install driver software.
Cancel

2) When the screen shown left is displayed, click "Locate and install driver software (recommended)".

REMARK

When user account control is enabled, the following screen appears.
Click the Continue button to continue the installation.

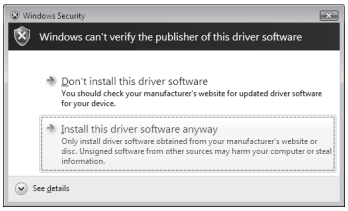


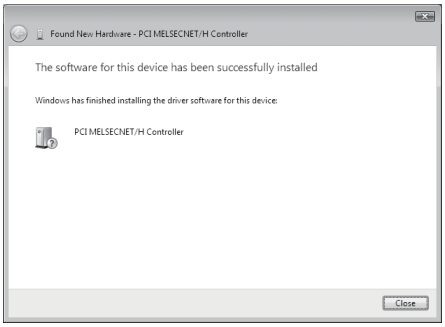

Found New Hardware - Network Controller
Insert the disc that came with your Network Controller
If you have the disc that came with your device, insert it now. Windows will automatically search the disc for driver software.
I don't have the disc. Show me other options.
Next
Cancel

3) The screen shown left is displayed.
Insert the CD-ROM, and then click the Next to start the drive installation.

REMARK

When the following screen appears, click "Install this driver software anyway" to continue the installation.


Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details


Found New Hardware - PCI MELSECNET/H Controller
The software for this device has been successfully installed
Windows has finished installing the driver software for this device:
PCI MELSECNET/H Controller
Close

4) When the screen shown left is displayed, this means that the installation is completed.
Click the Close button to close the window.

REMARK

The icon in the screen shown left represents the device display of the MELSECNET/H board under Windows Vista® operating system.

(Complete)

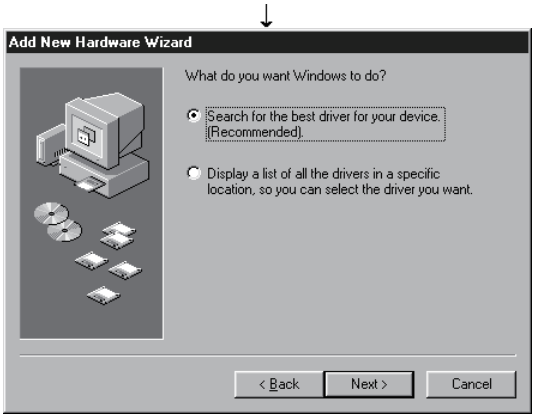
(4) When Microsoft® Windows® 95 Operating System or Microsoft® Windows® 98 Operating System is used

This explains installing the driver for the MELSECNET/H board when Windows® 95 or Windows® 98 is used.

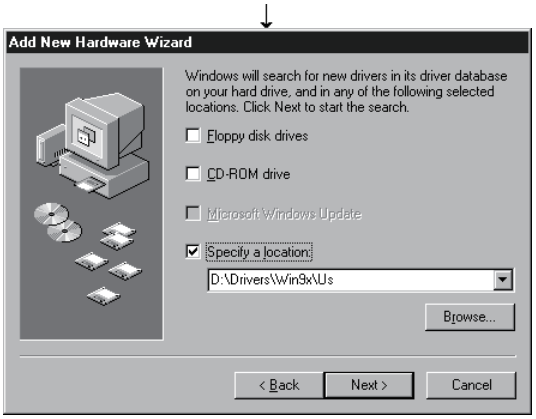
1) Mount the MELSECNET/H board to the personal computer, then power on the personal computer to start Windows® .

Add New Hardware Wizard
This wizard searches for new drivers for:
PCI Network Controller
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

2) When the screen shown left is displayed, click the Next> button.


Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

3) When the screen shown left is displayed, select "Search for the best driver for the your device (Recommended).", then click the Next> button.


Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
D:\Drivers\Win9x\Us
Browse...
< Back
Next >
Cancel

4) When the screen shown left is displayed, check "Specify a location.", then input D:\Drivers\Win9x\Us as the search location.
(In the above explanation, "D:" is the name of the CD-ROM drive. Input the name of the CD-ROM drive you are using.)
When setting is completed, load the CD-ROM in the CD-ROM drive, then click the Next> button.

(To the next page)

(From the previous page)

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Add New Hardware Wizard
Windows driver file search for the device:
PCI MELSECNET/H Controller
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\DRIVERS\WIN9X\US\AMNETH.INF
< Back
Next >
Cancel

5) Windows will search for the driver file for the device. Click the Next> button.

↓

6) When the screen shown left is displayed, the driver installation process is finished. Click the Finish button.

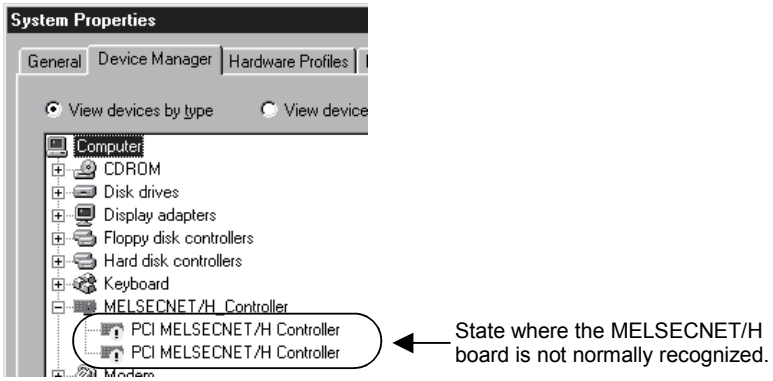
↓

(Complete)

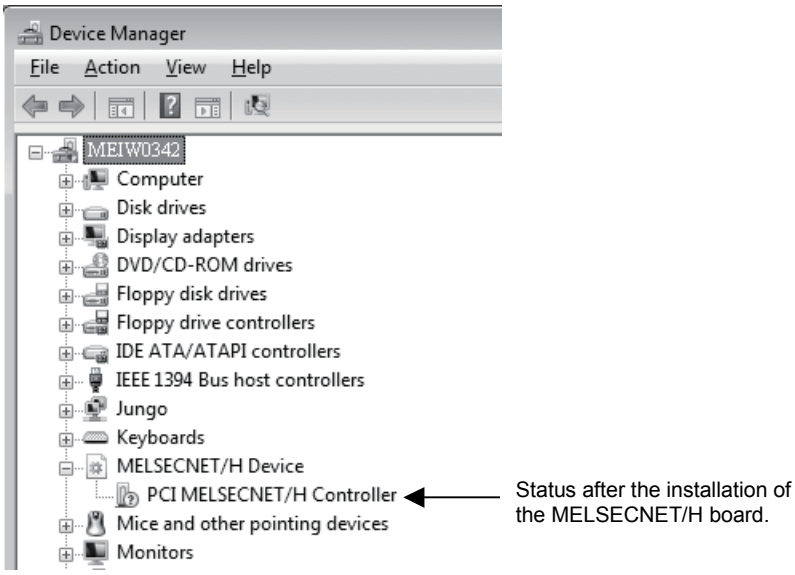
8 - 8

POINT

(1) When the MELSECNET/H board is used with Windows® 2000 Professional, Windows Server® 2003 R2, Windows® XP Professional, Windows Vista® , Windows® 95 and Windows® 98, it is necessary to install the MELSECNET/H board driver and the utility.
Also, if only the MELSECNET/H board driver is installed, the MELSECNET/H board driver will not start. (The item "PCI MELSECNET/H Controller" in the [Device Manager] screen will be displayed as shown below and will not be properly recognized by Windows.)



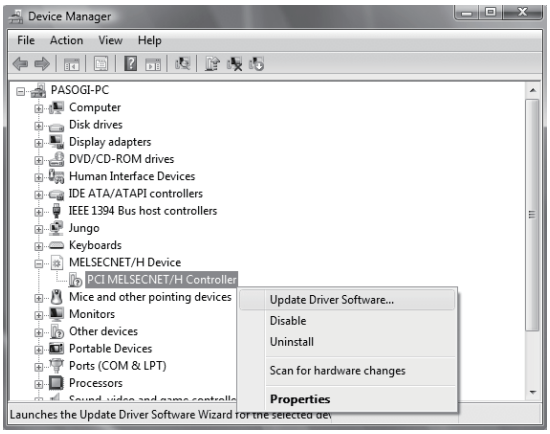
(2) When using the MELSECNET/H board under Windows Vista® , "PCI MELSECNET/H Controller" is displayed on the [Device Manager] as shown below after the installation of the MELSECNET/H board driver, but the MELSECNET/H board is normally recognized.



(3) If the MELSECNET/H board is not normally recognized even with both the MELSECNET/H board driver and the utulity installed, restart the personal computer after deleting "PCI MELSECNET/H Controller" in the [Device Manager] screen, then register the MELSECNET/H board driver again.

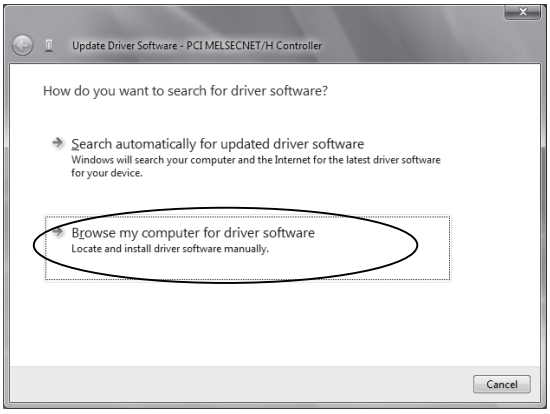
8.1.2 Updating the Driver

This section explains procedures for updating the MELSECNET/H board driver.
The screens of Windows Vista® are used for the explanation in this section.
These screens are slightly different from other operating systems.



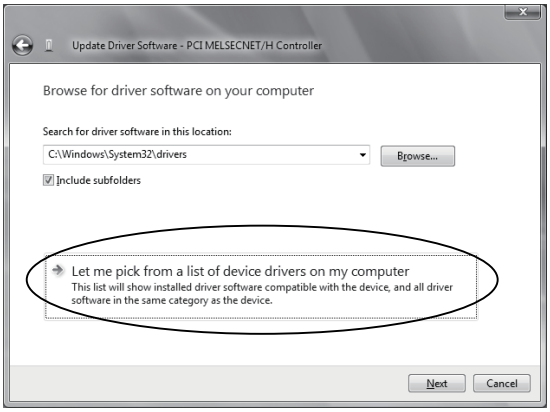
1) Open the Device Manager screen. Right-click on "PCI MELSECNET/H Controller" and select "Update Driver Software...".

↓


Update Driver Software - PCI MELSECNET/H Controller
How do you want to search for driver software?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device.
Browse my computer for driver software
Locate and install driver software manually.
Cancel

2) When the screen shown left is displayed, click "Browse my computer for driver software".

↓


Update Driver Software - PCI MELSECNET/H Controller
Browse for driver software on your computer
Search for driver software in this location:
C:\Windows\System32\drivers
Browse...
Include subfolders
Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
Next
Cancel

3) When the screen shown left is displayed, click "Let me pick from a list of device drivers on my computer".

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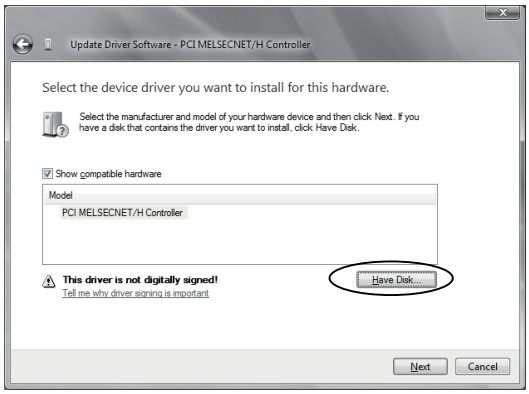
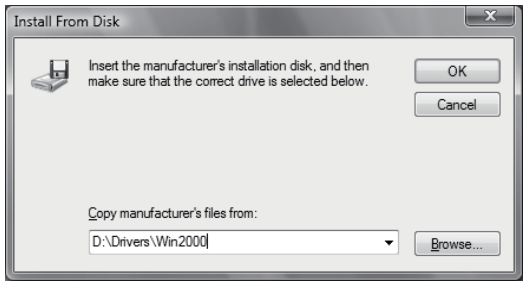

Update Driver Software - PCI MELSECNET/H Controller
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
PCI MELSECNET/H Controller
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
Next
Cancel

4) When the screen shown left is displayed, click the Have Disk.. button.

↓



5) When the screen shown left is displayed, enter "D:\Drivers\Win2000" for "Copy manufacturer's filesfrom". Insert the CD-ROM into the CD-ROM drive and click the OK button.
("D" mentioned above indicates CD-ROM drive name. Enter the name of the CD-ROM drive to be used.)

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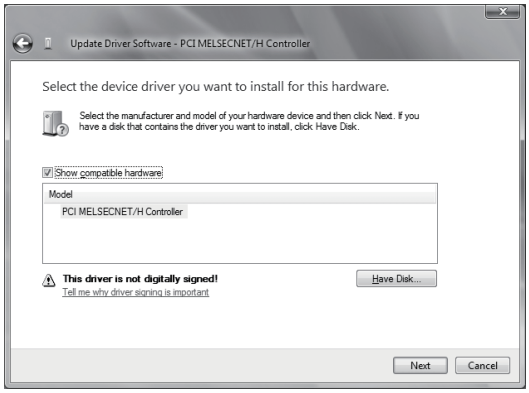
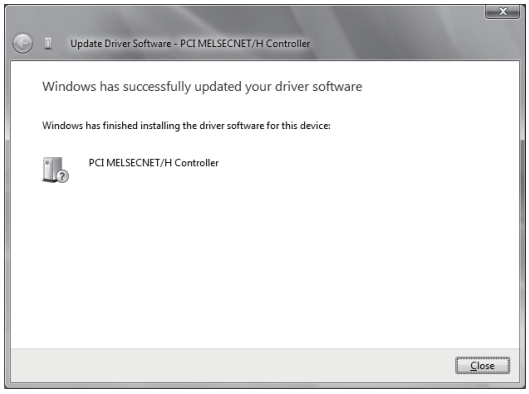

Update Driver Software - PCI MELSECNET/H Controller
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
PCI MELSECNET/H Controller
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
Next
Cancel

6) When the screen shown left is displayed, click the Next button.

↓


Update Driver Software - PCI MELSECNET/H Controller
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
PCI MELSECNET/H Controller
Close

7) When the screen shown left is displayed, the installation is completed.
Click the Close button.

↓

(Complete)

8 - 11

8.1.3 Installing the utility

This section explains installing the utility.

POINT

(1) When using the following Operating systems, logon as a user who has administrator authority.
- Windows Vista®
- Windows Server® 2003 R2
- Windows® XP Professional
- Windows® 2000 Professional
- Windows NT® Workstation 4.0

(2) Disassociate all applications registered in the startup procedure, then execute installation after restarting Windows® .

(3) Make sure to close other applications running on Windows® (including resident software such as antivirus software) before installation.

(4) The installer may not work normally because the update program of operating system or other companies' software such as Windows Update and java update may start automatically. Please install the driver after changing the setting of the update program not to start automatically.

(5) To install the utility, open "Add/Remove Programs" in Control Panel and install it from there.
It can also be installed by running "Setup.exe" directly.
Double click on the "Setup.exe" file. You can then begin the installation process from 6).

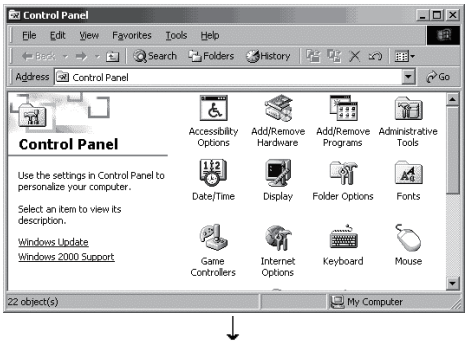
(6) When the utility has been installed on Windows® 95 and if the utility is not displayed properly, reboot the personal computer and reinstall the utility.

(7) Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver.
Or update the Windows operating system.

(1) When Microsoft® Windows® 95 Operating System, Microsoft® Windows® 98 Operating System, Microsoft® Windows NT® Workstation 4.0 Operating System, Microsoft® Windows® 2000 Professional Operating System, Microsoft® Windows Server® 2003 R2 Operating System or Microsoft® Windows® XP Professional Operating System is used

This explains installing the utility when Windows® 95, Windows® 98, Windows NT® Workstation 4.0, Windows® 2000 Professional, Windows Server® 2003 R2 or Windows® XP Professional is used.
The screens of Windows® 2000 Professional are used in the explanation. Therefore, these screens are slightly different from other operating systems.

Install the software package with reference to REMARK .



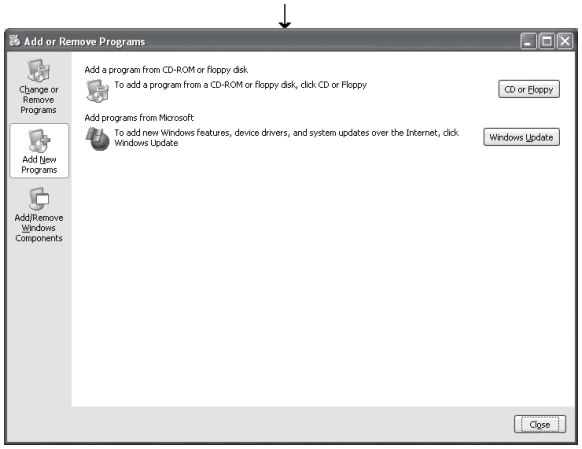
(To the next page)

1) Power on the personal computer and start Windows® .
2) Click [Start] – [Settings] – [Control Panel] and open Control Panel.

REMARK

When Windows® XP Professional is used, open [Start] – [Control Panel].

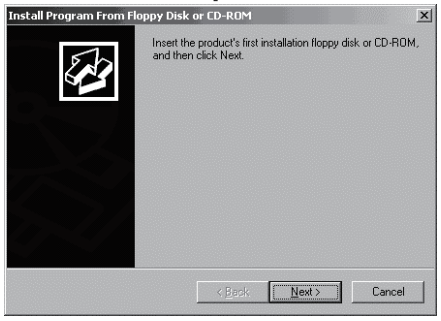
(From the previous page)


Add or Remove Programs
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Add a program from CD-ROM or floppy disk
To add a program from a CD-ROM or floppy disk, click CD or Floppy
CD or Floppy
Add programs from Microsoft
To add new Windows features, device drivers, and system updates over the Internet, click Windows Update
Windows Update
Close

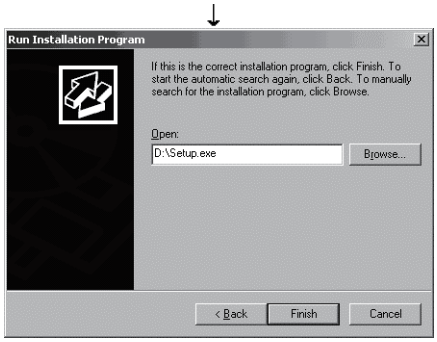
3) Open "Add or Remove Programs" and select "Add New Programs".
When the screen shown left is displayed, click the CD or Floppy button.

REMARK

When Windows® 95, Windows® 98 or Windows NT® Workstation 4.0 is used, open "Add/Remove Programs" and click the Install button.


Install Program From Floppy Disk or CD-ROM
Insert the product's first installation floppy disk or CD-ROM, and then click Next.
< Back
Next >
Cancel

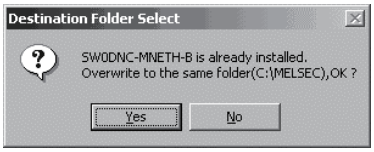
4) When the screen shown left is displayed, load the CD-ROM in the CD-ROM drive.
When the CD-ROM is loaded, click the Next> button.


Run Installation Program
If this is the correct installation program, click Finish. To start the automatic search again, click Back. To manually search for the installation program, click Browse.
Open:
D:\Setup.exe
Browse...
< Back
Finish
Cancel

5) When the screen shown left is displayed, "Setup.exe" will be detected. Click the Finish button and start the installation.
If "Setup.exe" is not found, click the Browse… and change the location to the location where the "Setup.exe" file is stored.

REMARK

When overwriting the software, the following screen will be displayed. Clicking the button and overwriting the software saves the information set by the MNETH utility and updates the MNETH utility only.



(To the next page)

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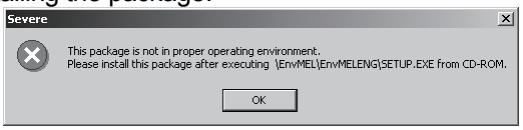
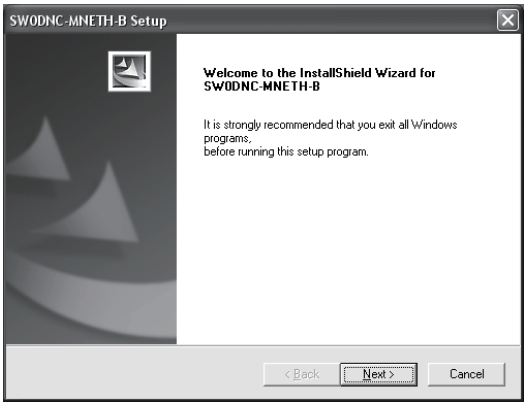
6) When the screen shown left is displayed, select "English," then click the OK button.

REMARK

Do not select Japanese.
When selecting Japanese, the message in the following dialog box will not be displayed correctly.
When the package is not in the proper operating environment, the following screen appears.
Click the OK button and execute \EnvMEL\EnvMELENG\SETUP.EXE in the CD-ROM for reinstalling the package.


Severe
This package is not in proper operating environment.
Please install this package after executing \EnvMEL\EnvMELENG\SETUP.EXE from CD-ROM.
OK


SW0DNC-MNETH-B Setup
Welcome to the InstallShield Wizard for SW0DNC-MNETH-B
It is strongly recommended that you exit all Windows programs,
before running this setup program.
< Back
Next >
Cancel

7) As the screen shown left is displayed, click the Next> button.

REMARK

When overwriting the software, the following screen will be displayed. Clicking the button and overwriting the software saves the information set by the MNETH utility and updates the MNETH utility only.

(To the next page)

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(From the previous page)

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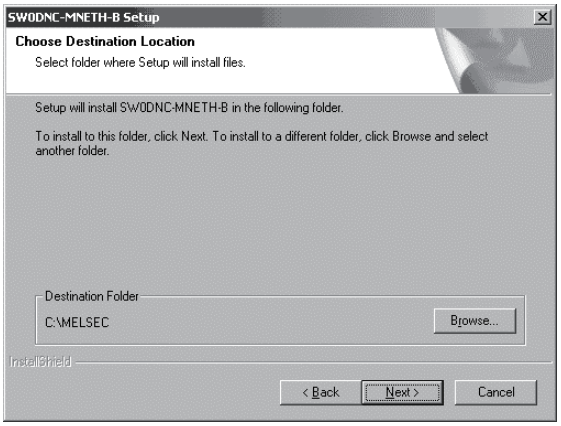
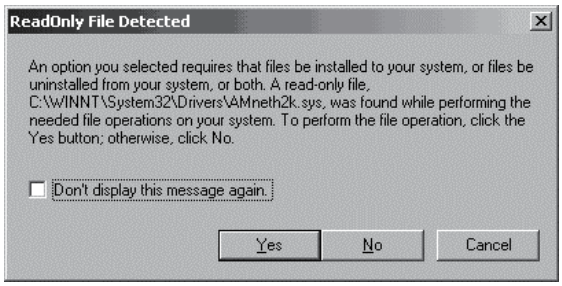

SW0DNC-MNETH-B Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install SW0DNC-MNETH-B in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\MELSEC
Browse...
InstallShield
< Back
Next >
Cancel

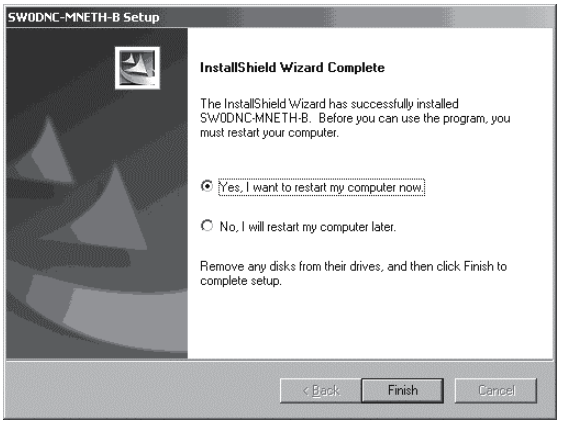
8) Designate the folder where the program is to be installed.
The default installation destination for SW0DNC-MNETH-B is "C:\MELSEC"
If the default is acceptable, click the Next> button.
When intending to change the installation destination folder, click the Browse… button and change it.

REMARK

If the following screen is displayed during installation, click the Yes button and continue with the installation.


ReadOnly File Detected
An option you selected requires that files be installed to your system, or files be uninstalled from your system, or both. A read-only file, C:\WINNT\System32\Drivers\AMneth2k.sys, was found while performing the needed file operations on your system. To perform the file operation, click the Yes button; otherwise, click No.
Don't display this message again.
Yes
No
Cancel

↓


SW0DNC-MNETH-B Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed SW0DNC-MNETH-B. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

9) If the screen shown left is displayed, the installation is finished.
When restarting the computer, make sure the "Yes, I want to restart my computer now." item is checked, then click the Finish button.

↓

(Complete)

POINT

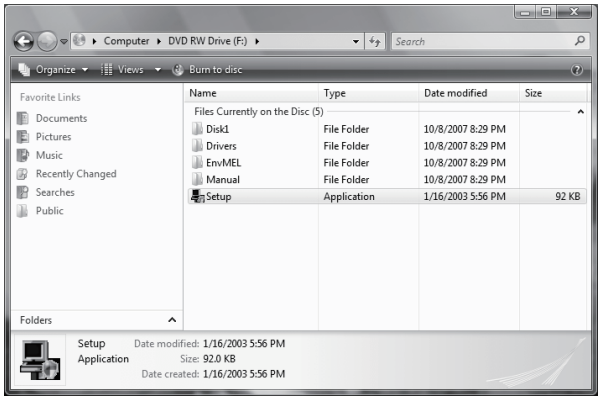
(1) If the installation fails, uninstall the software package if it can be uninstalled.
(2) When reinstalling the software, power off the computer after uninstalling the software, then power the computer back on and reinstall the software.

8 - 15

(2) When Microsoft® Windows Vista® Operating System is used

This explains installing the utility when Windows Vista® is used.

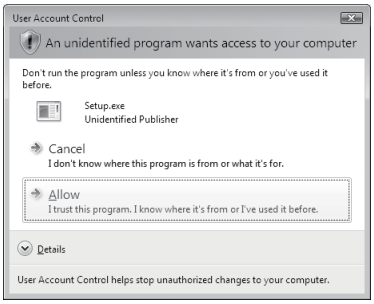
1) Power on the personal computer and start Windows® .

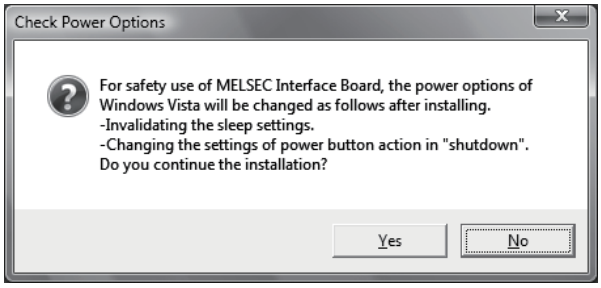


2) Select [Start] - [Computer] and execute "Setup.exe" of the CD-ROM.

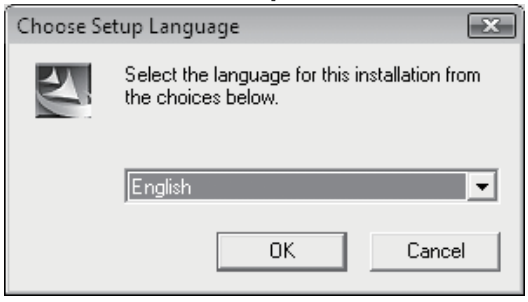
REMARK

When user account control is enabled, the following screen appears.
Click "Allow" to start the installation.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
Setup.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.


Check Power Options
For safety use of MELSEC Interface Board, the power options of Windows Vista will be changed as follows after installing.
-Invalidating the sleep settings.
-Changing the settings of power button action in "shutdown".
Do you continue the installation?
Yes
No

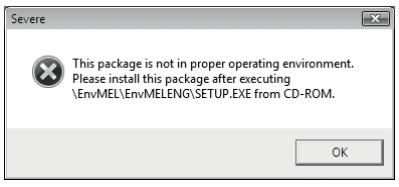
3) When the screen shown left is displayed, click the Yes button.



4) When the screen shown left is displayed, select "English," then click the OK button.

REMARK

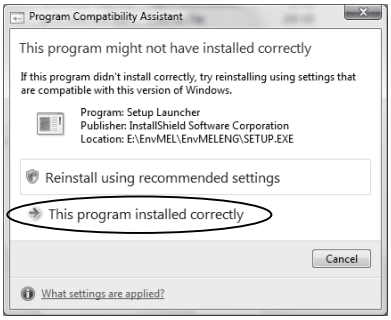
When the package is not in the proper operating environment, the following screen appears.
Click the OK button and execute \EnvMEL\EnvMELENG\SETUP.EXE in the CD-ROM for reinstalling the package.

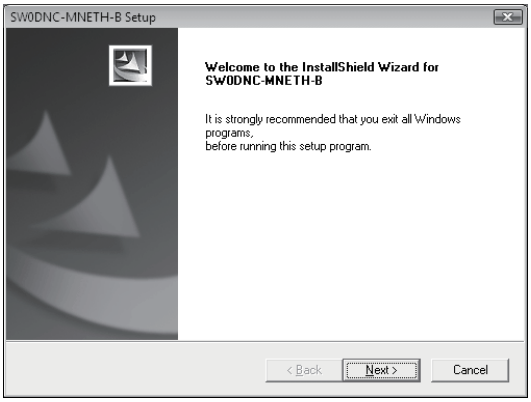


(To the next page)

(From the previous page)

After the installation of "Environment of MELSOFT" is completed, the Program Compatibility Assistant screen shown below may be displayed.
Close the screen by clicking "This program installed correctly".

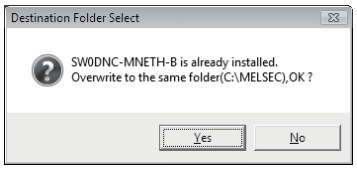

Program Compatibility Assistant
This program might not have installed correctly
If this program didn't install correctly, try reinstalling using settings that are compatible with this version of Windows.
Program: Setup Launcher
Publisher: InstallShield Software Corporation
Location: E:\EnvMEL\EnvMELENG\SETUP.EXE
Reinstall using recommended settings
This program installed correctly
Cancel
What settings are applied?


SW0DNC-MNETH-B Setup
Welcome to the InstallShield Wizard for SW0DNC-MNETH-B
It is strongly recommended that you exit all Windows programs,
before running this setup program.
< Back
Next >
Cancel

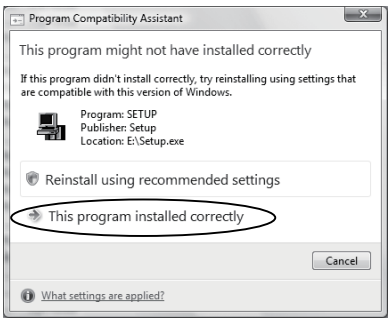
5) When the screen shown left is displayed, click the Next> button.

REMARK

When overwriting the software, the following screen will be displayed. Clicking the button and overwriting the software saves the information set by the MNETH utility and updates the MNETH utility only.



After the overwriting software is completed, the Program Compatibility Assistant screen shown below may be displayed.Close the screen by clicking "This program installed correctly".


Program Compatibility Assistant
This program might not have installed correctly
If this program didn't install correctly, try reinstalling using settings that are compatible with this version of Windows.
Program: SETUP
Publisher: Setup
Location: E:\Setup.exe
Reinstall using recommended settings
This program installed correctly
Cancel
What settings are applied?

(To the next page)

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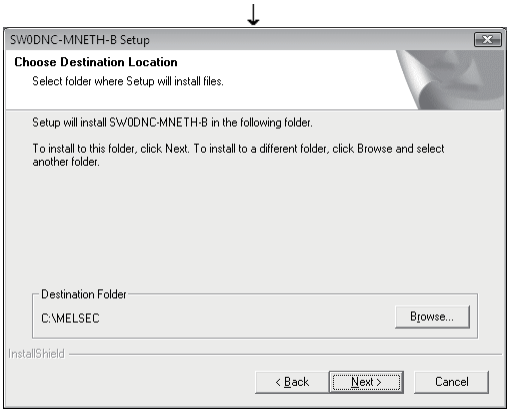
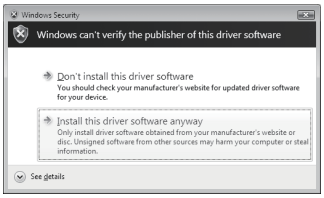
(From the previous page)

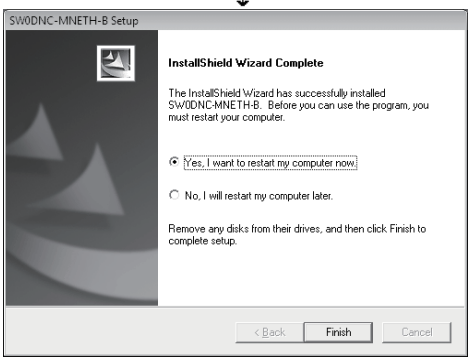

SW0DNC-MNETH-B Setup
Choose Destination Location
Select folder where Setup will install files.
Setup will install SW0DNC-MNETH-B in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\MELSEC
Browse...
InstallShield
< Back
Next >
Cancel

6) Designate the folder where the program is to be installed.
The default installation destination for SW0DNC-MNETH-B is "C:\MELSEC"
If the default is acceptable, click the [Next>] button.
When intending to change the installation destination folder, click the [Browse…] button and change it.

REMARK

If the following screen appears during installation, click the "Install this driver software anyway", and continue the installation.

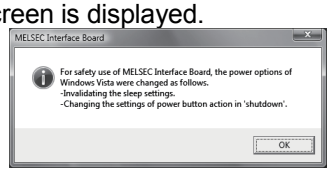

Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details


SW0DNC-MNETH-B Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed SW0DNC-MNETH-B. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

7) If the screen shown left is displayed, the installation is finished.
When restarting the computer, make sure the "Yes, I want to restart my computer now." item is checked, then click the [Finish] button.

REMARK

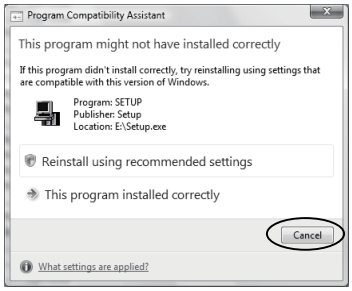
If the setting of Power Options is changed, the following screen is displayed.


MELSEC Interface Board
For safety use of MELSEC Interface Board, the power options of Windows Vista were changed as follows.
-Invalidating the sleep settings.
-Changing the settings of power button action in 'shutdown'.
OK

(Complete)

POINT

(1) If the installation fails, uninstall the software package if it can be uninstalled.
(2) When reinstalling the software, power off the computer after uninstalling the software, then power the computer back on and reinstall the software.
(3) If the installation is canceled, the Program Compatibility Assistant screen may be displayed. Close the screen by clicking the [Cancel] button.


Program Compatibility Assistant
This program might not have installed correctly
If this program didn't install correctly, try reinstalling using settings that are compatible with this version of Windows.
Program: SETUP
Publisher: Setup
Location: E:\Setup.exe
Reinstall using recommended settings
This program installed correctly
Cancel
What settings are applied?

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8.2 Icons to be Registered

When installing the software packages, the icons shown below are registered in [Start] - [Program] - [MELSEC].

REMARK

When Windows® XP Professional, Windows Server® 2003 R2, Windows Vista® is used, the following icons are registered in [Start] - [All Programs] - [MELSEC].

Icon	Utility name	Description
	MELSECNET/H Utility	Starts MNETH Utility.
	Error Viewer ＊1	Starts Error viewer.
	Device Monitor Utility	Starts Device monitor utility.
	MELSEC Data Link Function HELP	Starts HELP for the Data Link Function.

＊1: It can be used only with Windows® 95 and Windows® 98.

8.3 Uninstalling the Software Package

This section explains the uninstalling the software package.
The screens of Windows® 2000 Professional are used in the explanation.
Therefore, these screens are slightly different from other Operating systems.
Uninstall the software package with reference to REMARK .

POINT

(1) When using the following Operating systems, logon as a user who has administrator authority.
- Windows Vista®
- Windows Server® 2003 R2
- Windows® XP Professional
- Windows® 2000 Professional
- Windows NT® Workstation 4.0

(2) Disassociate all applications registered in the startup procedure, then execute uninstallation after restarting Windows® .

(3) Make sure to close other applications running on Windows® (including resident software such as antivirus software) before uninstallation.

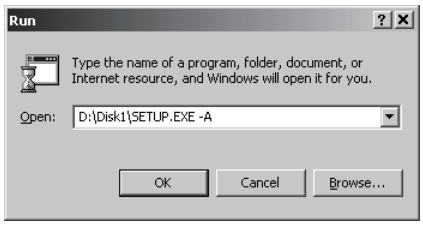
(4) Be sure to uninstall the software using the Control Panel. Do not attempt to start "Uninstaller.exe" directly.

(5) When reinstalling the software, turn off the computer after uninstalling the software, then turn the computer back on and reinstall the software.

(6) Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver.
Or update the Windows operating system.

(7) If all of above operations fail, perform the following operation.

1) Append optional "-A" as described in the below screen, and execute \Disk1\Setup.exe in the CD-ROM.



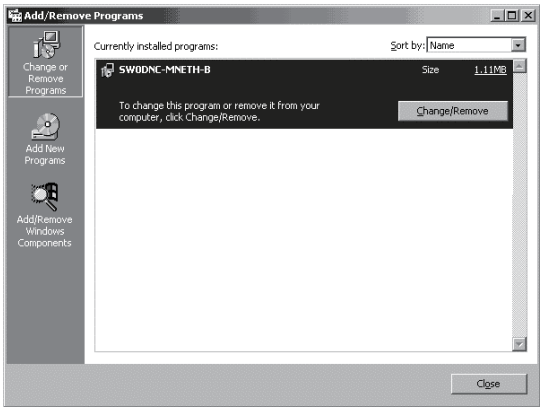
2) Reinstall the software package.

3) Uninstall the software package.

1) Click [Start] – [Settings] – [Control Panel] and open Control Panel.

REMARK

When Windows® XP Professional or Windows Vista® is used, open [Start] – [Control Panel].



2) Open "Add/Remove Programs" and select "Change/Remove programs".
Select SW0DNC-MNETH-B and click the Change/Remove button.

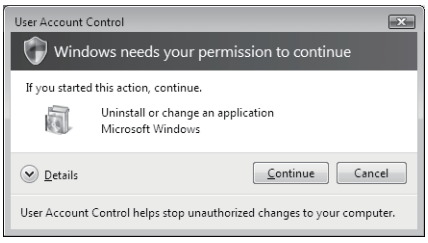
REMARK

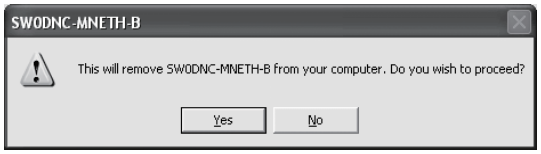
(1) The menus and buttons are different by the operating system.

Operating system	Menu on control panel	Button
Windows NT® 4.0	"Add /Remove programs" *1	Add/ Remove
Windows® 2000		Change/ Remove
Windows® XP Windows Server® 2003 R2	" Change or Remove Programs "	Change/ Remove
Windows Vista®	"Uninstall a program"	Uninstall /Change

*1: Select "Change/Remove programs" for Windows® 2000, and "Install/Uninstall " for the other operating systems.

(2) When user account control is enabled under Windows Vista® , the following screen appears. Click the Continue button to continue the uninstallation.





3) The screen shown left will be displayed, so click the Yes button and start the uninstallation process.

4) When the uninstallation process is finished, click the OK button.

(Complete)

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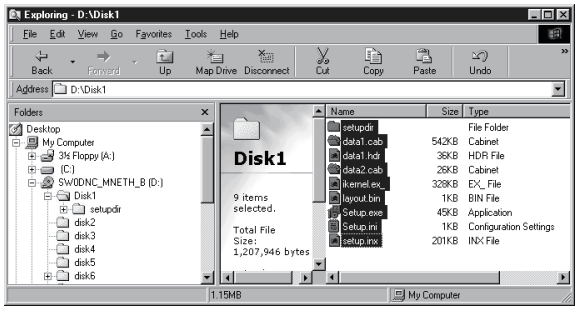
8.4 Copying the Program to Floppy Disks, then Installing It

This section explains how to install the software in the case that the personal computer has no CD-ROM drive.
On the CD-ROM, folders have been created with capacities which enable them to be copied onto a single FD easily.
If the CD-ROM drive is selected using Windows Explorer, Disk 1 to Disk 6 will be displayed, so prepare the same number of formatted floppy disks as the number of folders to be copied.
It is not necessary to copy Setup.exe in the CD-ROM's root directory.

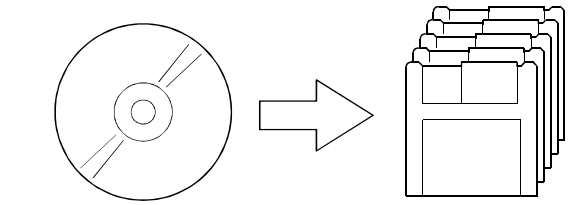
(1) Copying folders to the FD



Select the drive where the CD-ROM is set.
Next, select all the files in SW0DNC-MNETH-B Disk 1 and copy them to the FD. When copying of Disk 1 is completed, use the same method to copy the files in the directory to the other floppy disks.
Setup.exe for FD is included in Disk 1, so it is not necessary to copy Setup.exe used by the CD-ROM.

↓

(2) Copy Completion

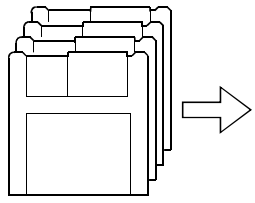


SW0DNC-MNETH-B(CD-ROM)

FD(Disk 1 to Disk 6)

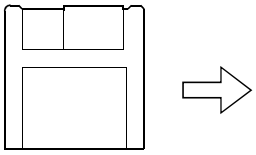
When copying of the program to the FD is completed, insert the floppy disks one at a time in the personal computer where the program is to be installed and install SW0DNC-MNETH-B.
Carry out the installation according to the messages shown in the installation screen. See section 8.1, "Installing the Software Package" for details of the installation operation.

(3) Using FD



Use when installing SW0DNC-MNETH-B (utility).

Disk 1 to Disk 5



Use when installing SW0DNC-MNETH-B (driver).

Disk 6

When copying of the program to each FD is completed, use them in the installations shown at left.

9 UTILITY OPERATIONS

9.1 Utility Common Operations

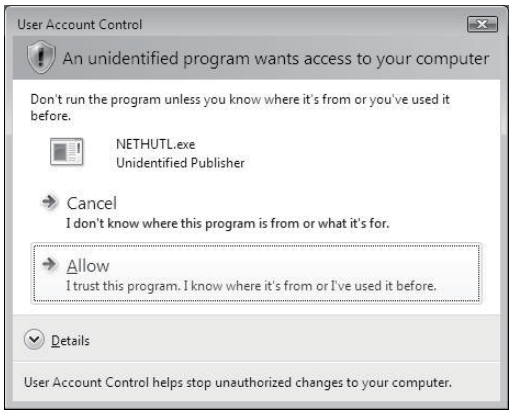
This section explains the common operations for each utility.

POINT

When using the following Operating systems, logon as a user who has administrator authority.

- Windows Vista® *1
- Windows Server® 2003 R2
- Windows® XP Professional
- Windows® 2000 Professional
- Windows NT® Workstation 4.0

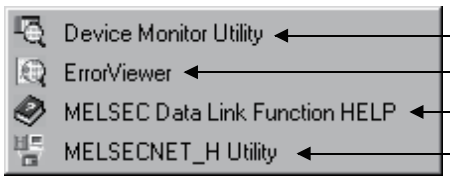
*1: When a utility is run using Windows Vista® while user account control (UAC) is available, the following warning screen appears. Select "Allow" to run the utility.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
NETHUTL.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.

For details on how to prevent this screen from being displayed, refer to Appendix 4.

9.1.1 Starting an utility

Start an utility by clicking one of the following menus inside [Start] - [Programs *1] - [MELSEC] menu.



Starts the Device Monitor Utility.
Starts the Error Viewer. *1
Starts MELSEC Data Link Function HELP.
Starts the MELSECNET/H Utility.

*1 : When Microsoft® Windows® XP Professional, Windows Server® 2003 R2 or Windows Vistais® is used, [All programs] is displayed.

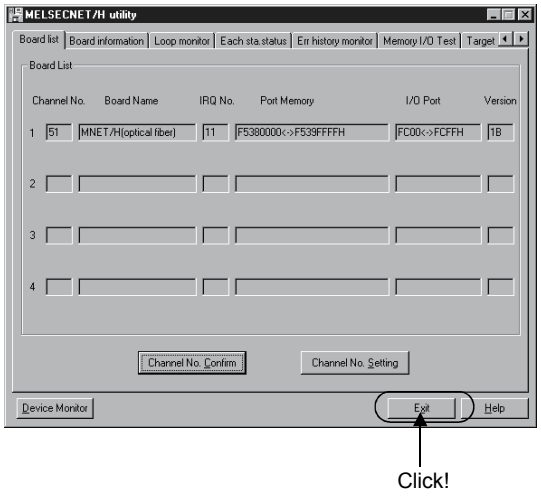
*2 : The error viewer is available only when Microsoft® Windows® 95 Operating System or Microsoft®Windows® 98 Operating System is used as OS.

9 - 1

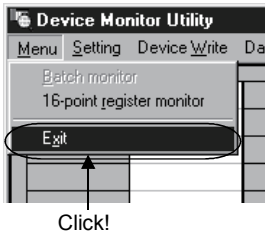
9.1.2 Ending an utility

The following explains how to end an utility.

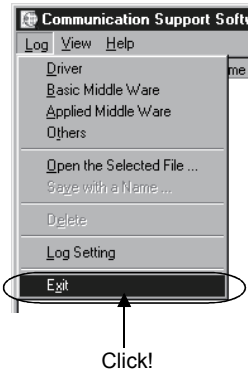
(1) To end the MNETH utility, click the Exit button at the bottom of the utility screen.



(2) To end the device monitor utility, click [Menu] - [Exit] from the menu bar.
When a dialog box is displayed, click the Yes button.



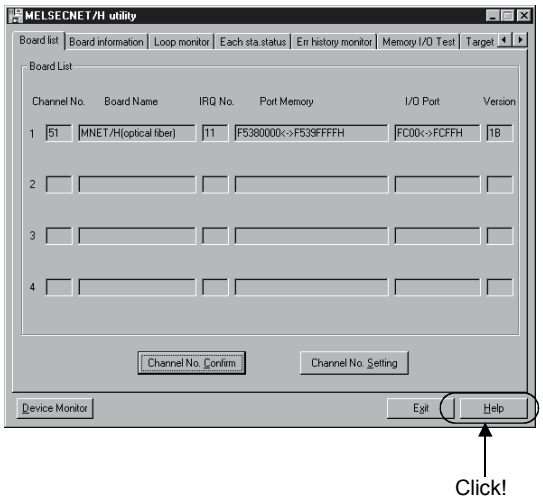
(3) To end the error viewer, click [Log] - [Exit] menu from the menu bar.



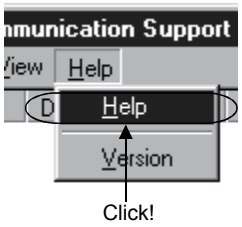
9.1.3 Displaying the help screen

The following explains how to display the utility's help screen.

(1) To display the utility's help screen, click the Help button at the lower right-hand corner of the utility screen.



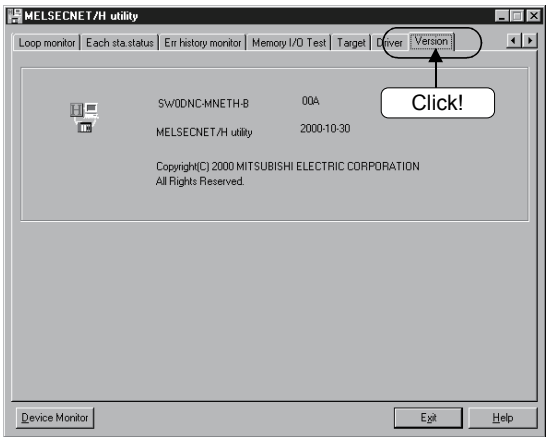
(2) To display the help screen for the device monitor utility and error viewer, click [Help] - [Help] from the menu bar.



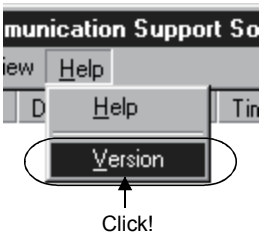
9.1.4 Verifying the version

The following explains how to verify the utility version.

(1) To verify the utility's version, click the "Version" tab.

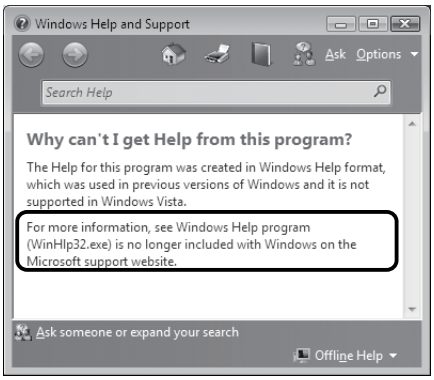


(2) To verify the version information for the device monitor utility and error viewer, click [Help] - [Version] from the menu bar.



POINT

When Help is run using Windows Vista® , the following "Windows Help and Support" screen may appear, and the Help screen is not displayed.
Perform the following procedure to install “WinHlp32.exe” which is needed to display the Help screen. (Note: The personal computer needs to be connected to the internet.)


Windows Help and Support
Ask
Options
Search Help
Why can't I get Help from this program?
The Help for this program was created in Windows Help format, which was used in previous versions of Windows and it is not supported in Windows Vista.
For more information, see Windows Help program (WinHlp32.exe) is no longer included with Windows on the Microsoft support website.
Ask someone or expand your search
Offline Help

(1) Click the Help button.

(2) The screen shown left opens. Click the link section.

(3) The Microsoft technical information page opens.
(http://support.microsoft.com/kb/917607)
Follow the instruction and download the Windows Help program for Windows Vista® (WinHlp32.exe).

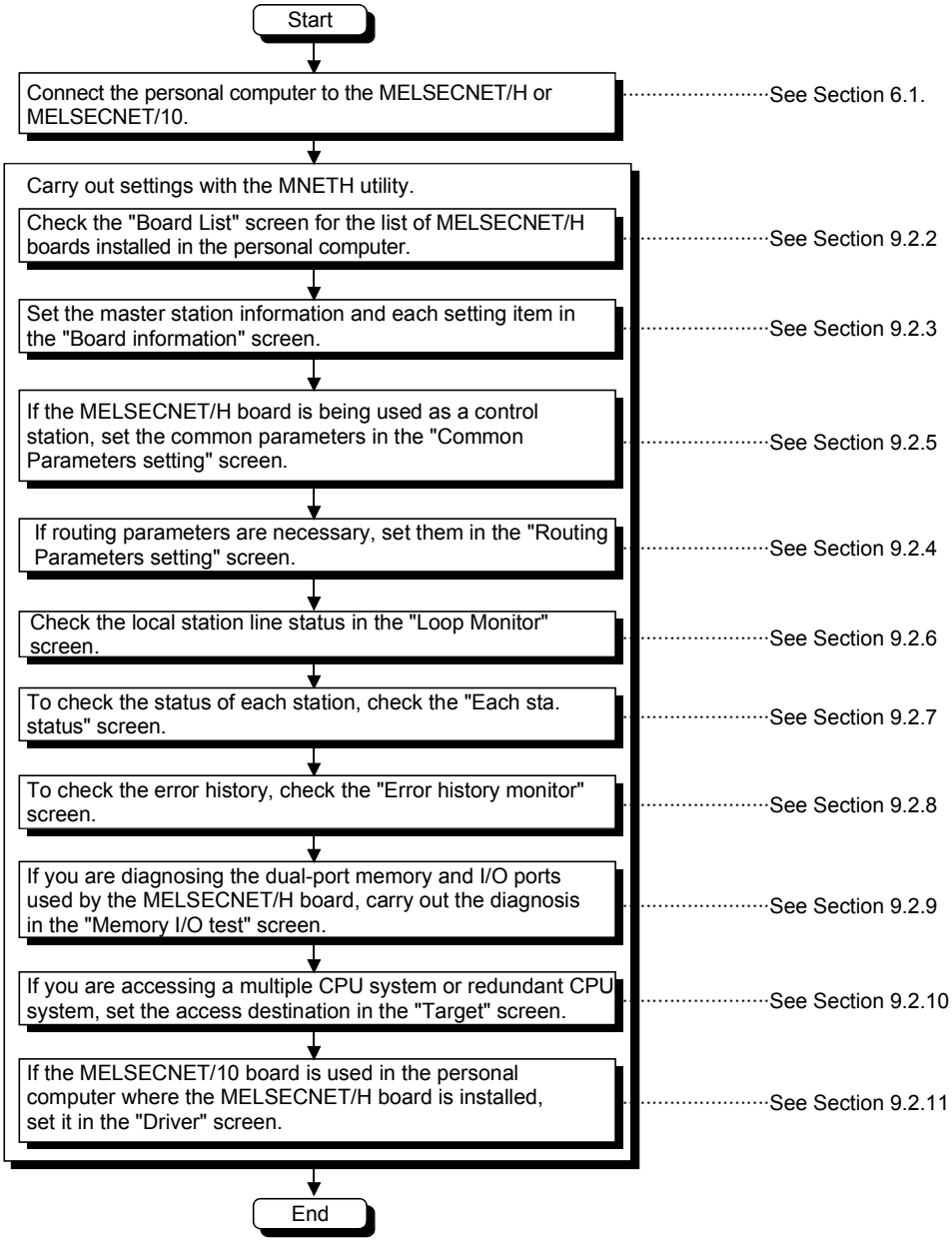
(4) Install the file that has been downloaded.

9.2 MNETH Utility

This section explains the MNETH utility's screen explanations and operation methods. Use of the MNETH utility is explained here using the screen explanations when the Q80BD-J71LP21-25 and Windows® 98 are installed.

9.2.1 Operating procedure

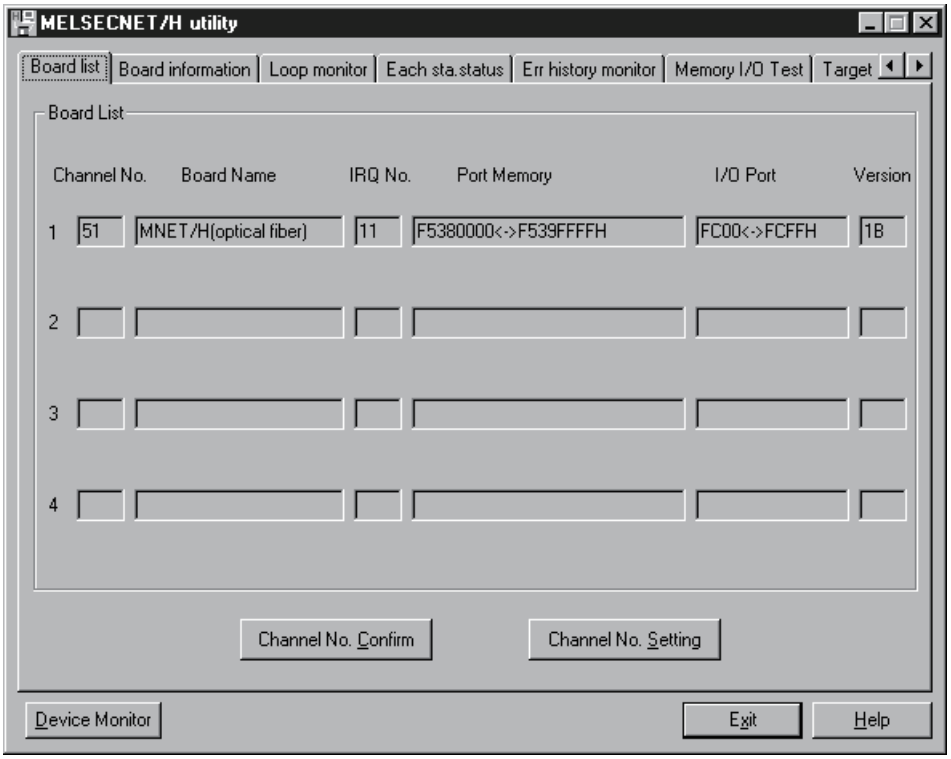
This section explains the MNETH utility's operating procedure.


Start
Connect the personal computer to the MELSECNET/H or MELSECNET/10.
See Section 6.1.
Carry out settings with the MNETH utility.
Check the "Board List" screen for the list of MELSECNET/H boards installed in the personal computer.
See Section 9.2.2
Set the master station information and each setting item in the "Board information" screen.
See Section 9.2.3
If the MELSECNET/H board is being used as a control station, set the common parameters in the "Common Parameters setting" screen.
See Section 9.2.5
If routing parameters are necessary, set them in the "Routing Parameters setting" screen.
See Section 9.2.4
Check the local station line status in the "Loop Monitor" screen.
See Section 9.2.6
To check the status of each station, check the "Each sta. status" screen.
See Section 9.2.7
To check the error history, check the "Error history monitor" screen.
See Section 9.2.8
If you are diagnosing the dual-port memory and I/O ports used by the MELSECNET/H board, carry out the diagnosis in the "Memory I/O test" screen.
See Section 9.2.9
If you are accessing a multiple CPU system or redundant CPU system, set the access destination in the "Target" screen.
See Section 9.2.10
If the MELSECNET/10 board is used in the personal computer where the MELSECNET/H board is installed, set it in the "Driver" screen.
See Section 9.2.11
End

9.2.2 Board list screen operation

This operation displays the hardware information, and confirms and sets the channel No. set in the MELSECNET/H board.

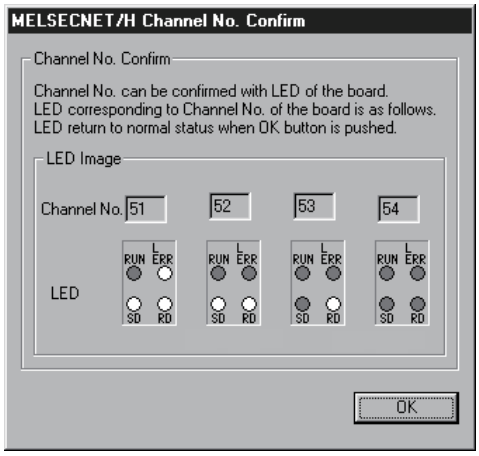
(1) Board List Screen



Item	Content
Channel No.	Displays the MELSECNET/H board's channel No.
Board Name	Displays the model name of the connected MELSECNET/H board. The contents displayed on the screen and the corresponding MELSECNET/H board's model name are as shown below. **Screen Display** / **Model Name** MNET/H (Optical fiber) / Q80BD-J71LP21-25, Q81BD-J71LP21-25, Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE MNET/H (Coaxial) / Q80BD-J71BR11
IRQ No.	Displays the IRQ used by the MELSECNET/H board.
Port Memory	Displays the range of dual-port memory occupied by the MELSECNET/H board.
I/O Port	Displays the range of the I/O ports occupied by the MELSECNET/H board.
Version	Displays the MELSECNET/H board's ROM version.
[Channel No. Confirm] Button	Displays the "Channel No. Confirm" screen. For details, see (2), "Channel No. Confirm."
[Channel No. Setting] Button	Displays the "Channel No. Setting" screen. For details, see (3), "Channel No. Setting."

(2) Channel No. Confirm Screen

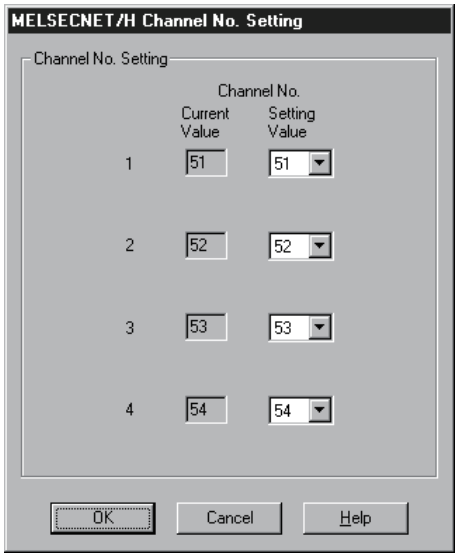
Clicking the [Channel No. Confirm] screen in the "Board List" screen displays the following dialog box, and enables the user to check the channel No. by the status of the display LED's on the MELSECNET/H board.



Item	Content
Channel No.	Displays the channel No. of the installed MELSECNET/H board.
LED	Displays the display LED lighting on status on the MELSECNET/H board.

(3) Channel No. Setting Screen

Clicking the [Channel No. Setting] screen in the "Board List" screen displays the following dialog box, and enables the user to change the channel No. of the MELSECNET/H board installed in the personal computer *1.

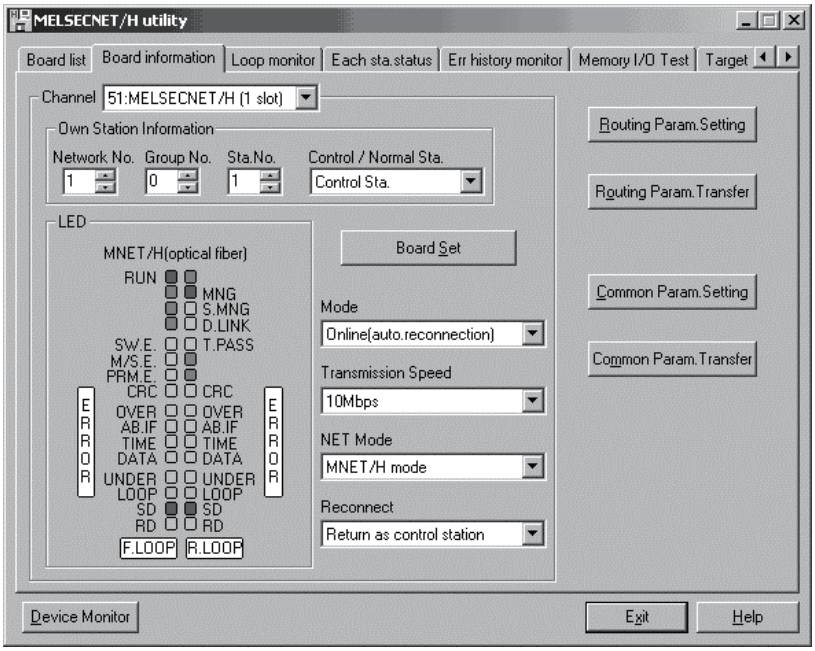


Item		Content
Channel	Current Value	Displays the current channel No.
	Setting Value	Changes the channel No. (Setting range: 51 to 54)

*1: Before changing channel No., exit Device Monitor Utility and all of user programs that are using the MELSEC data link library.

9.2.3 Board information screen operation

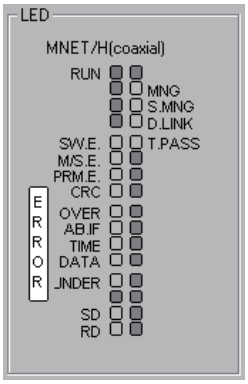
The Board information screen is used to set and display various information about the installed MELSECNET/H board.



Item	Content
Channel	Sets a channel (MELSECNET/H board) to be used.
Own Station Information	Displays information and changes setting on the host.
Board Set button	Resets the MELSECNET/H board to renew the information of the MELSECNET/H board selected in Channel.
Mode	Performs mode setting for the MELSECNET/H board, and displays the present value.
Transmission Speed	Selects the transmission speed. When the Q80BD-J71LP21G, Q80BD-J71LP21GE and Q80BD-J71BR11 is used and when "MNET10 Mode" is selected in the NET Mode, "25 Mbps" cannot be selected.

Mode	Description
Online (auto. reconnection)	Used for normal communication.
Offline	Enters the state in which there is no connection to the network.
Forward loop	Check the forward loop status.
Reverse loop	Check the reverse loop status.
Test between master station	Perform station to station test. (Select at control station)
Test between slave station	Perform station to station test (Select at normal station)
Self-loopback test	Check the hardware including the cable and communication circuit for transmission system by the MELSECNET/H board.
Internal self-loopback test	Check the hardware including the communication circuit for transmission system by the MELSECNET/H board.
H/W test	Check the hardware of the MELSECNET/H board.

Transmission speed	Description
10 Mbps	Selected when the MELSECNET/H (10 Mbps) is connected.
25 Mbps	Selected when the MELSECNET/H (25 Mbps) is connected.

<table>
<tr><th>Item</th><th>Content</th></tr>
<tr><td>NET mode</td><td>Selects the network where the MELSECNET/H board is connected. When "25 Mbps" is selected in the transmission speed item above, this item cannot be selected.
<table>
<tr><th>Net Mode</th><th>Description</th></tr>
<tr><td>MNET/H Mode</td><td>Selected when the MELSECNET/H is connected.</td></tr>
<tr><td>MNET/10 Mode</td><td>Selected when the MELSECNET/10 is connected.</td></tr>
<tr><td>MELSECNET/H Extended mode *1</td><td>Selected when the MELSECNET/H is connected and MELSECNET/H Extended mode is used.</td></tr>
</table></td></tr>
<tr><td>Reconnect</td><td>Designates by station type when a control station reconnects.
This item is displayed on the screen and can be selected only when the MELSECNET/H board is a control station.
<table>
<tr><th>Reconnect</th><th>Description</th></tr>
<tr><td>Return as control station</td><td>Causes the MELSECNET/H board to reconnect as a control station.</td></tr>
<tr><td>Return as normal station</td><td>Causes the MELSECNET/H board to reconnect as a normal station.</td></tr>
</table></td></tr>
<tr><td>LED</td><td>Display the operation status of the MELSECNET/H board.
<table>
<tr><th>LED name</th><th>LED status</th></tr>
<tr><td>RUN</td><td>Normal data link</td></tr>
<tr><td>MNG</td><td>Control station</td></tr>
<tr><td>S.MNG</td><td>Sub-control station</td></tr>
<tr><td>D.LINK</td><td>During data link</td></tr>
<tr><td>T.PASS</td><td>Baton pass execution *2</td></tr>
<tr><td>SW.E</td><td>Switch setting error</td></tr>
<tr><td>M/S.E.</td><td>Duplicate error on station number and control station</td></tr>
<tr><td>PRM.E.</td><td>Parameter error</td></tr>
<tr><td>CRC</td><td>Code check error</td></tr>
<tr><td>OVER</td><td>Data entry delay error</td></tr>
<tr><td>AB.IF</td><td>All receiving data are 1.</td></tr>
<tr><td>TIME</td><td>Time over</td></tr>
<tr><td>DATA</td><td>Reception data error</td></tr>
<tr><td>UNDER</td><td>Transmission data error</td></tr>
<tr><td>LOOP</td><td>Forward/reverse loop receiving error</td></tr>
<tr><td>SD</td><td>Data being transmitted</td></tr>
<tr><td>RD</td><td>Data being received</td></tr>
</table>
For Q80BD-J71BR11
 
</td></tr>
<tr><td>Routing Param. Setting Button</td><td>Displays the "Routing Parameter Setting" screen.
See section 9.2.4 Routing Parameter Setting operation for details.</td></tr>
<tr><td>Routing Param. Transfer Button</td><td>Transfers the routing parameter that has been set.</td></tr>
<tr><td>Common Param. Setting Button</td><td>Displays the "Common Parameters Setting" screen
This button is displayed only when the MELSECNET/H board is a control station.
See section 9.2.5, "Common Parameters Setting Screen operation" for details.</td></tr>
<tr><td>Common Param. Transfer Button</td><td>Transmits the set common parameters.
This button is displayed only when the MELSECNET/H board is a control station.</td></tr>
</table>

*1: When assigning 2000 bytes or more to the number of link points sent by a station, set all stations including control stations and normal stations to the MELSECNET/H Extended mode.

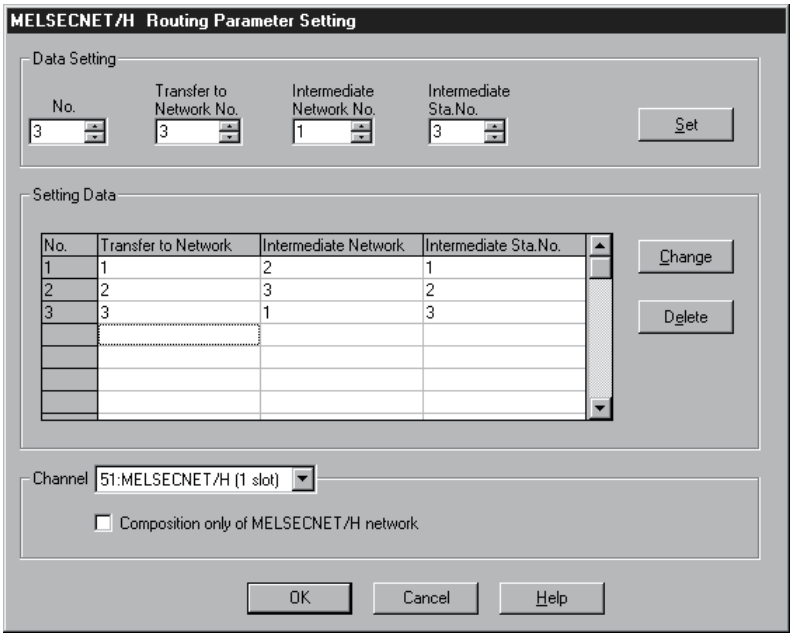
*2: If T.PASS LED flickers at uncertain intervals, take the corrective action by referring to Section 15.4.

9.2.4 Routing Parameter Setting screen operation

The routing parameter setting screen is used to set the transfer destination, relay destination network number, and relay destination station number.

POINT

(1) The routing parameters are common with channels No. 51 to 54.
They cannot be set one channel No. at a time.
(2) Up to 64 routine parameters can be set.



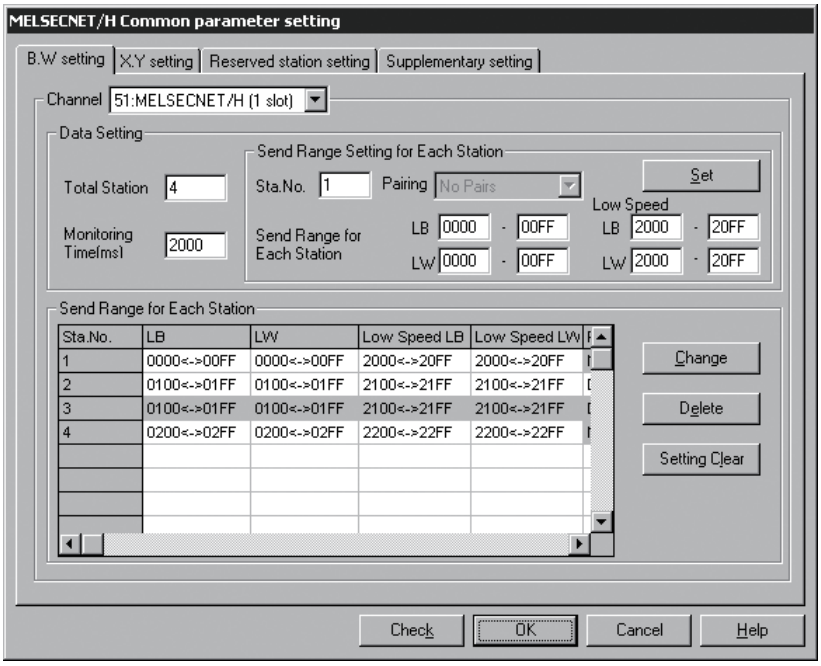
Item	Content
No.	Input the number of the line to set or change. (Setting range : 1 to 64)
Transfer to Network No.	Input the transfer destination network number
Intermediate Network No.	Input the relay destination network number
Intermediate Sta. No.	Input the relay destination station number.
[Set] button	Enters the data that has been set in Set data.
Setting Data	Displays a list of data that has been set so far.
[Change] button	Selecting a line to be changed and clicking the button will change the entered set data. (Double-clicking the line to be changed also does the same operation.)
[Delete] button	Selecting a line to delete and clicking the button will delete the entered set data.
Channel	Selects the channel No. where the settings are to be changed. If the routing function from the MELSECNET/H board is used and the programmable controller CPU is accessed, when the configuration of the network system is the MELSECNET/H only, click the check box and add a check mark. ＊1

＊1: If a MELSECNET/10 board exists in the network, do not add a check mark to the check box. The maximum transmitted data size differs in the MELSECNET/H and the MELSECNET/10 (1920 bytes in the MELSECNET/H and 960 bytes in the MELSECNET/10), so there is danger of data being cut when they are transmitted via the MELSECNET/10.

9.2.5 Common parameter setting screen operation

This operation sets the common parameters necessary for establishing data links.
Display is possible only when the MELSECNET/H board is in the control station.

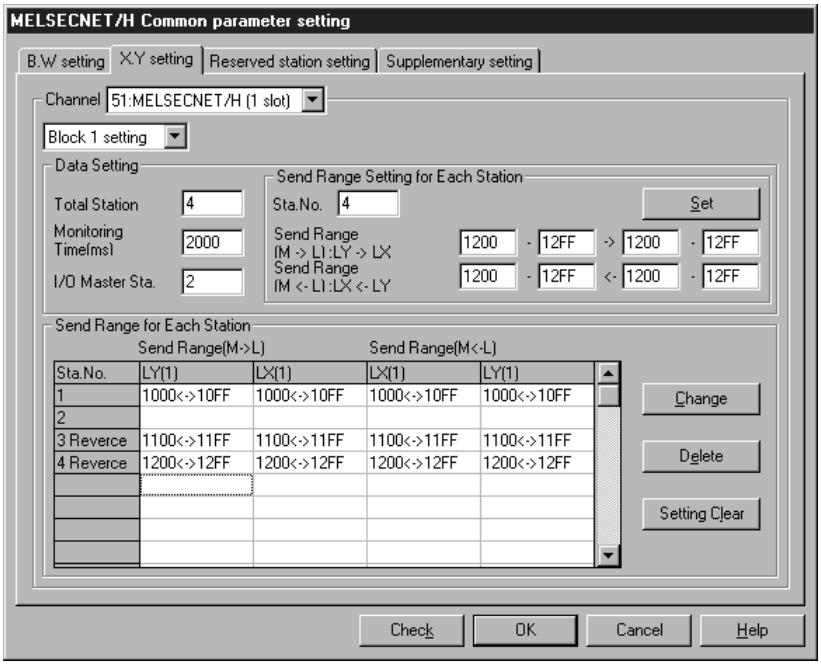
(1) B, W setting screen



Item		Content
Channel		Selects the channel (MELSECNET/H board) performing the settings.
Total Station		Input the total number of stations (including the control station) in the network that the MELSECNET/H board is the control station for.
Monitoring Time		Sets the link scan time monitoring time.
Send Range for Each Station	Sta. No.	Input the station No. of the station to be set or changed.
	Pairing ＊1	Set whether pairing is enabled or not. • If "Do Pairs" is selected, settings for the next station No. become the same as those for the current one, being displayed with its "Send Range for Each Station" area masked. • Pairing is not available if the last station No. is selected for "Sta. No. "
	LB ＊2	Input the LB (Link relay) range.
	LW ＊2	Input the LW (Link register) range.
	Low Speed LB	Input the range of the LB (link relay) used in the low speed cyclic transmission function.
	Low Speed LW	Input the range of the LW (link register) used in the low speed cyclic transmission function.
Set button		Registers the set contents in each station's transmission range.
Send Range for Each Station		Displays the set data contents up to the present time in one list.
Change button		Select the line to change, then when the button is clicked, the data which are registered can be changed. (If the line to be changed is double clicked, the same operation can be performed.)
Delete button		Select the line to change, then when the button is clicked, the data which are set can be deleted.
Settings Clear Button		Initializes the contents of all the B and W settings registered in the "Common parameter setting" screen.

＊1: Paring is not available if the operating system is Windows® 95 or Windows® 98.
＊2: For the MELSECNET/H Extended mode, up to 35840 bytes can be set to number of link points per station.

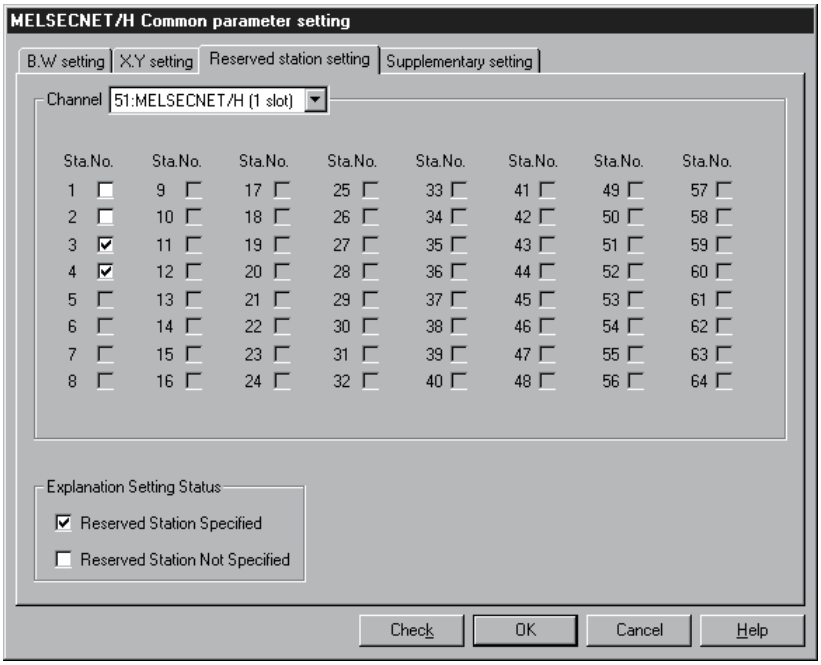
(2) X, Y setting screen



Item		Content
Channel		Selects the channel (MELSECNET/H board) performing the settings.
Block 1 setting (Block 2 setting)		Switches the block that is set.
Total station		Input the total number of stations (including the control station) in the network that the MELSECNET/H board is the control station for.
Monitoring Time		Sets the link scan time monitoring time.
I/O Master Sta.		Input the station No. of the I/O master station.
Send Range for Each Station	Sta. No.	Input the station No. of the station to be set or changed.
	Sending Range (M → L)	Assigns link devices (LX, LY) 1 to 1 between the I/O master station (M station) and other stations. *1
	Sending Range (M ← L)	Assigns link devices (LX, LY) 1 to 1 between the I/O master station (M station) and other stations. *1
[Set] button		Registers the set contents in each station's transmission range.
Send Range for Each Station		Displays the set data contents up to the present time in one list.
[Change] button		Select the line to change, then when the button is clicked, the data which are registered can be changed. (If the line to be changed is double clicked, the same operation can be performed.)
[Delete] button		Select the line to change, then when the button is clicked, the data which are set can be deleted.
[Setting Clear] Button		Initializes the contents of all the X and Y settings registered in the "Common parameter setting" screen.

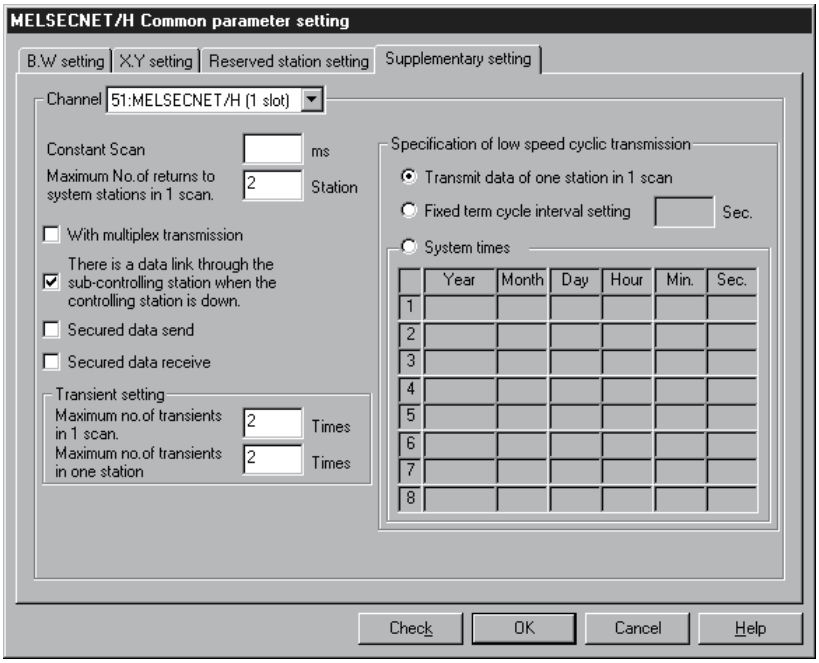
*1: For the MELSECNET/H Extended mode, up to 35840 bytes can be set to number of link points per station.

(3) Reserved station setting screen



Item	Content
Channel	Selects the channel (MELSECNET/H board) performing the settings.
Sta. No.	This sets reserve stations. If a check mark is placed in the check box, that station is set as a reserve station.

(4) Supplementary setting screen

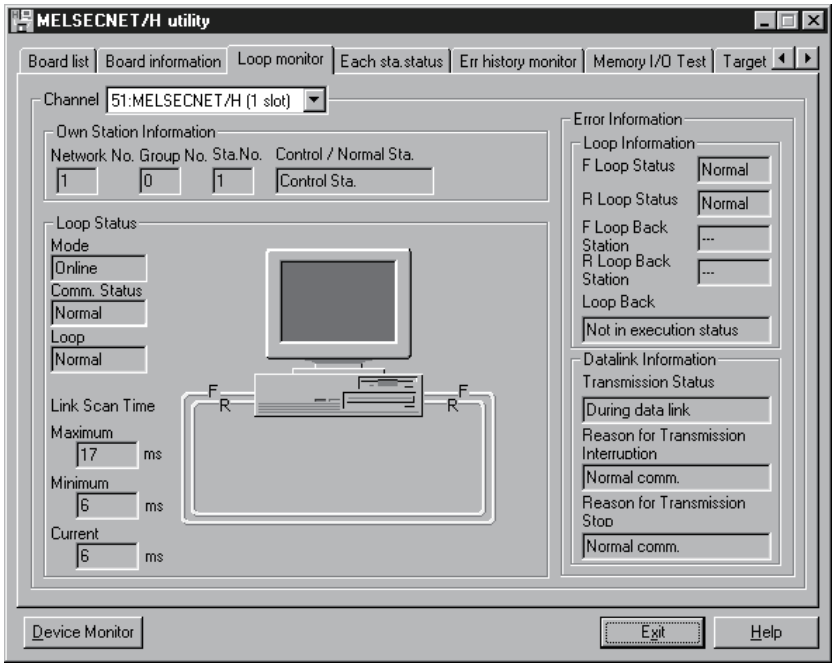


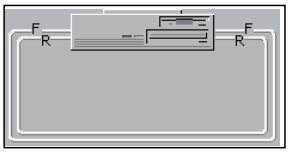
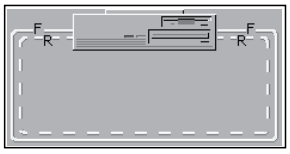
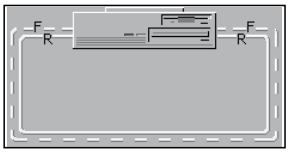
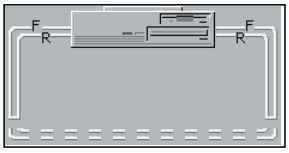
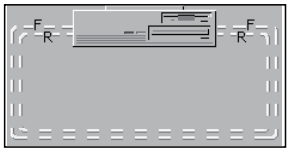
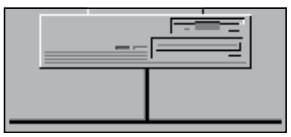
Item		Content
Channel		Selects the channel (MELSECNET/H board) performing the settings.
Constant scan		Sets a constant link scan. (Setting range: 1 to 500 ms) If it is not run, do not input anything.
Maximum No. of returns to system stations in 1 scan		Sets the number of stations with transmission errors that can undergo return to system in 1 link scan.
With multiplex transmission		Set when running the multiplex transmission function.
There is a data link through the sub-controlling station when the controlling station is down.		Set when executing the control station move function.
Secured data send		Set when preventing data separation of link data in station units in cyclic transmissions. ＊1
Secured data receive		
Transient setting	Maximum No. of transients in 1 scan.	Sets the number of transients that can be executed in one link scan by one network (total for 1 network as a whole). (Valid setting: 1 to 255 times; Default: 2 times)
	Maximum No. of transients in one station.	Sets the number of transients that can be executed in one link scan by one station. (Valid setting: 1 to 10 times; Default: 2 times)
Specification of low speed cyclic transmission	Transmit data of one station in 1 scan	Set in cases such as when data to be transmitted to another station are collected and sent one station at a time in 1 link scan.
	Fixed time cycle interval setting	Carries out low speed cyclic transmission at the preset intervals. (Valid setting interval: 1 to 65535 s.)
	System times	Carries out low speed cyclic transmission in accordance with the preset time. (Settings: Year, Month, Day, Hour, Minute, Second)

＊1: Data separation prevention is when older data with the meaning of 2-word (32 bit) link data such as the positioning unit's current position are prevented from being separated into new data with 1-word (16 bit) units due to cyclic transmission timing.

9.2.6 Loop monitor screen operation

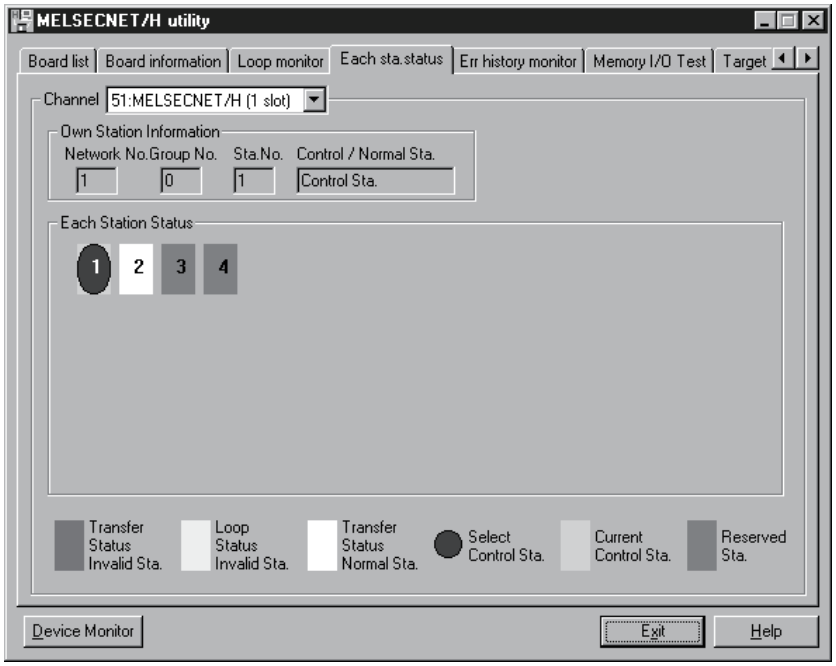
This screen is used to monitor the loop status of the host.



Item	Content
Channel	Sets the channel (MELSECNET/H board) perform loop monitor.
Own Station Information	Displays the host information.
Loop Status	Displays the host's loop status using characters and graphics. Also, images are changed as shown below according to the connection status. <For Q80BD-J71LP21-25,Q81BD-J71LP21-25,Q80BD-J71LP21S-25,Q80BD-J71LP21G and Q80BD-J71LP21GE>  Forward loop : Normal Reverse loop : Normal  Forward loop : Normal Reverse loop : Abnormal  Forward loop : Abnormal Reverse loop : Normal  Data link by loop-back  Forward loop : Abnormal Reverse loop : Abnormal <For Q80BD-J71BR11>  Display the same regardless of the loop status.
Loop Information	Displays current loop status.
Datalink Information	Displays the current data link status.

9.2.7 Each station status screen operation

This screen displays communication status and loop status for each station.



Item	Content
Channel	Sets the channel (MELSECNET/H board) perform each station status.
Own Station Information	Displays the host information.
Each Station Status	Displays the communication status and loop status for every link station that is set using parameters. (Red) Transfer Status Invalid Sta.····· Indicates a baton-pass status error. (Yellow) Loop Status Invalid Sta.····· Indicates a forward/reverse loopstatus error. (White) Transfer Status Normal Sta.····· Indicates the station in normal communication. (Blue) Select Control Sta.····· Indicates the station that is set as the control station. (Aqua) Current Control Sta.····· Indicates the station that is actually operating as the control station. (Gray) Reserve Sta.····· Indicates the station that is set as a reserved station. However, this is valid only when the host is executing cyclic communication.

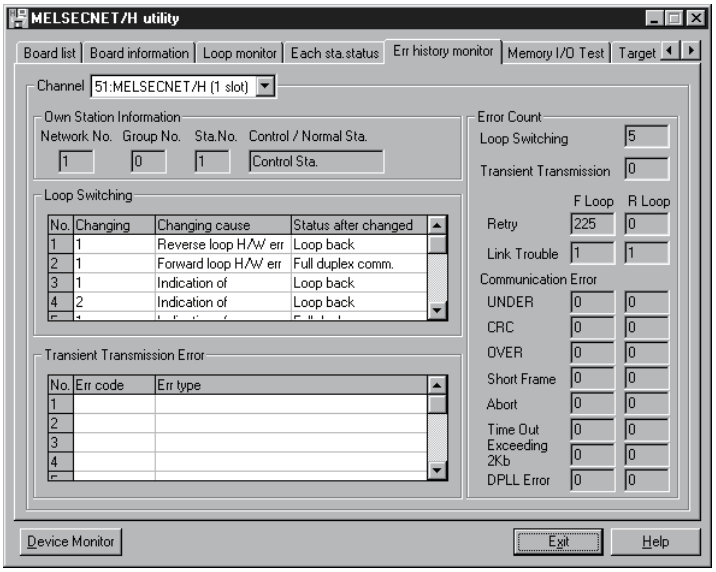
9.2.8 Error history monitor screen operation

This screen displays the history of loop errors, communication errors, and transient transmission errors.

POINT

(1) Up to 16 items are stored in the loop switch data history.
When there are more than 16 items, items will be erased from the history, starting with the oldest one.
(From old to new: No. 1 to No. 16)

(2) See the following manuals for details on the error code and error type of a specific transient transmission error that may be displayed:
- Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)
- QnA/Q4AR corresponding MELSECNET/10 network system reference manual



Item	Content
Channel	Sets the channel (MELSECNET/H board) perform error history monitor.
Own Station Information	Displays the host information.
Loop Switching	Displays the loop change factors and status after changing. (For optical loop)

Item	Description
Sta. No.	Displays the station number that requested a loop switch and loop back.
Factor	Displays the factor by which loop switch and loop back were executed.
Switched to	Displays the data link status after a loop switch.

<table>
<tr><th>Item</th><th>Content</th></tr>
<tr><td>Transient Transmission Error</td><td>Displays the error code occurring when transient transmission was executed at the host.
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Error code</td><td>Displays the code of the error occurring due to transient transmission.</td></tr>
<tr><td>Error type</td><td>Displays the type of the error occurring due to transient transmission.</td></tr>
</table></td></tr>
<tr><td>Error Count ＊1</td><td>Displays the number of error occurrences.
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Loop Switching</td><td>Displays the number of loop switch/loopback.</td></tr>
<tr><td>Transient Transmission</td><td>Displays the number of error occurrence due to transient transmission.</td></tr>
<tr><td>Retry</td><td>Displays the number of retries (retry at communication error).</td></tr>
<tr><td>Link Trouble</td><td>Displays the number of line error occurrence.</td></tr>
<tr><td>Communication Error</td><td>
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>UNDER</td><td>Displays the number of UNDER errors.</td></tr>
<tr><td>CRC</td><td>Displays the number of CRC errors.</td></tr>
<tr><td>OVER</td><td>Displays the number of OVER errors.</td></tr>
<tr><td>Short Frame</td><td>Displays the number of short frame (data message is too short.) errors.</td></tr>
<tr><td>Abort</td><td>Displays the number of AB.IF errors.</td></tr>
<tr><td>Time Out</td><td>Displays the number of Time Out errors.</td></tr>
<tr><td>Exceeding 2 kb</td><td>Displays the number of Exceeding 2Kb errors.</td></tr>
<tr><td>DPLL Error</td><td>Displays the number of DPLL (Cannot identify data normally due to synchronization/modulation) errors.</td></tr>
</table></td></tr>
</table></td></tr>
</table>

9 - 19

*1 : The following explains the error causes and the corresponding corrective actions.
In addition to Error history monitor screen, they can be confirmed using the following link special registers (SW). For more information of each link special registers (SW), refer to Q Corresponding MELSECNET/H network system reference manual (PLC to PLC network).

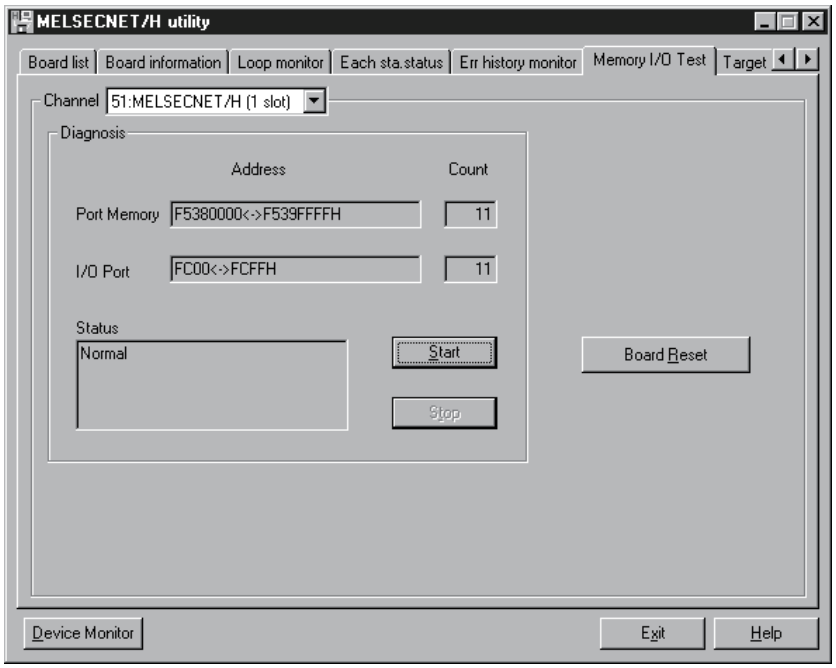
Item	Link special register	Error cause	Corrective action
Loop Switching	SW00CEH	Power ON/OFF status of the station, cable fault, noise, etc.	*2
Transient transmission	SW00EEH	Power ON/OFF status or CPU module error of the external station, cable fault, noise, etc.	Confirm the error code of the transient transmission error, and then take the corrective action.
Retry	SW00C8H, SW00C9H	Power ON/OFF status of the station, cable fault, noise, etc.	*2
Link Trouble	SW00CCH, SW00CDH	Power ON/OFF status of the adjacent station, cable fault, noise, etc.	*2
UNDER	SW00B8H, SW00C0H	Power ON/OFF status of the adjacent station, cable fault, etc.	*2
CRC	SW00B9H, SW00C1H	Disconnection status of the station that sends data to the corresponding station, cable fault, hardware error, noise, etc.	*2
OVER	SW00BAH, SW00C2H	Cable fault, Hardware error, noise, etc.	*2
Short Frame	SW00BBH, SW00C3H		*2
Abort	SW00BCH, SW00C4H	Disconnection status of the station that sends data to the corresponding station, cable fault, hardware error, noise, etc.	*2
Time Out	SW00BDH, SW00C5H	Insufficient data link monitor time, cable fault, noise, etc.	*2
Exceeding 2Kb	SW00BEH, SW00C6H	Cable fault, Hardware error, noise, etc.	*2
DPLL Error	SW00BFH, SW00C7H		*2

*2 : Basically, the number of times for each error occurrence does not matter. However, following corrective actions are required, if the count value raises frequently during operation.
(1) Confirm the power ON/OFF statuses of the host station and other station.
(2) Check the cable and connector (connector disconnection, loose connection, cable breakage, cable length, etc).
(3) Conduct self - loopback test, internal self-loopback test and hardware test.
(4) Conduct station to station test and forward/reverse loop test.
(5) Wire the cable again with reference to the network module manual and MELSECNET/H board manual. In addition, install the devices again with reference to the user's manual for the CPU module.

9.2.9 Memory, I/O Test screen operation

This operation diagnoses between the MELSECNET/H board and personal computer.

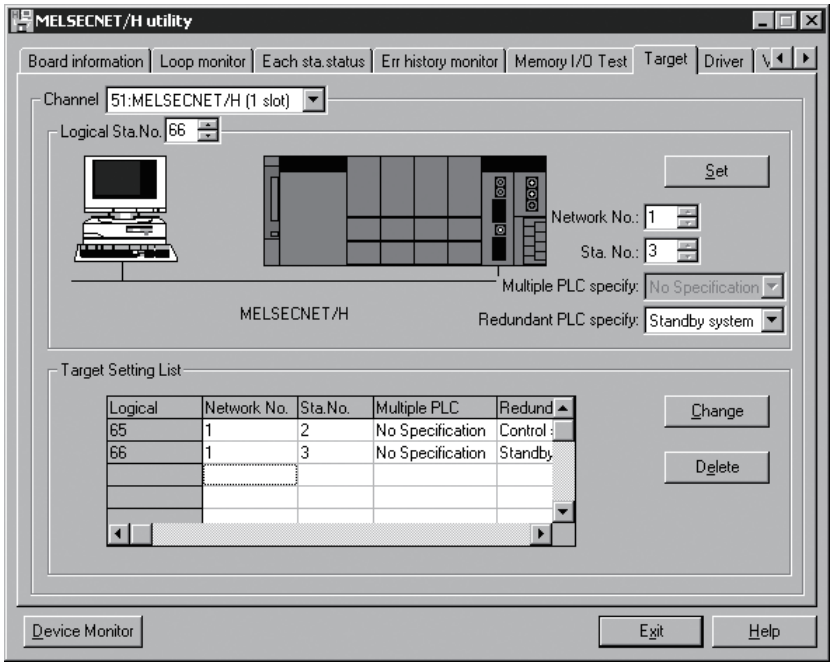
POINT
(1) If you are starting the diagnosis, do so after disconnecting the external cables. (2) If you desire to switch screens during the diagnosis, click the [Stop] button, switching screens after stopping the diagnosis.



Item	Content
Channel	Sets the channel (MELSECNET/H board) perform the memory, I/O diagnosis.
Diagnosis	Displays the address where the diagnosis is being performed, the number of times it is being performed and the status.
[Start] Button	Starts the memory, I/O diagnosis.
[Stop] Button	Stops the memory, I/O diagnosis.
[Board Reset] Button	Resets the MELSECNET/H board.

9.2.10 Target screen operation

This operation sets the logical station No. for access to a multiple CPU system or Redundant CPU system.

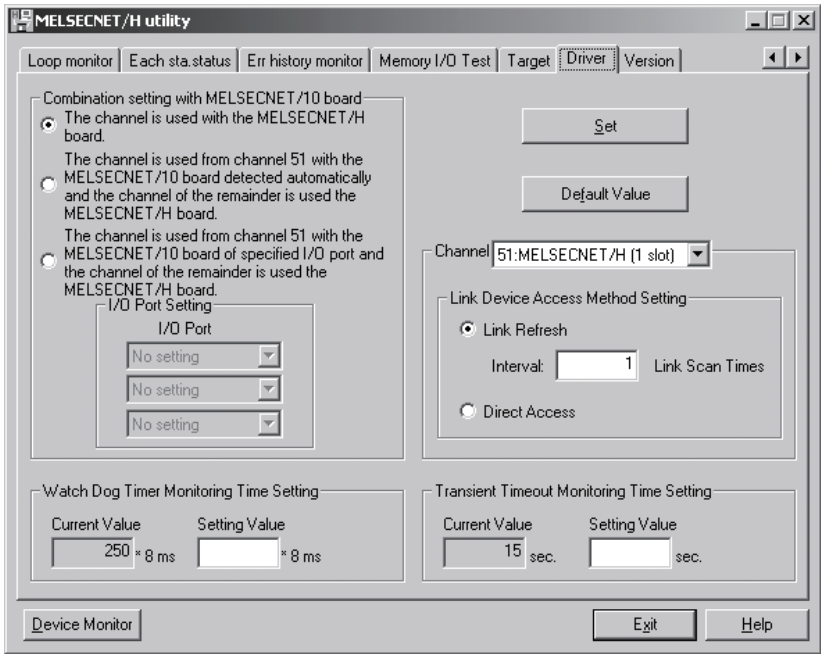


Item	Content
Channel	Sets the channel (MELSECNET/H board) perform the target settings.
Logical Sta. No.	Input the logical sta. No. which is setting or changing the settings (setting range: 65 to 239).
Network No.	Input the network No. of the station doing the accessing.
Sta. No.	Input the station No. of the network module controlled by the multiple CPU system or redundant CPU system.
Multiple PLC specify	Specify a target programmable controller CPU No. in the multiple CPU system.
Redundant PLC specify ＊1	Specify a target redundant CPU in the redundant CPU system.
[Set] Button	Registers the setting contents in the list of external devices.
[Change] Button	Select the line to change. When this button is clicked, the data that are registered can be changed. (The same operation is performed when the line being changed is double clicked.)
[Delete] Button	Select the line to be deleted. When this button is clicked, the registered logical station No. can be deleted.

＊1: In the redundant CPU system, the MELSECNET/H Extended mode cannot be used.

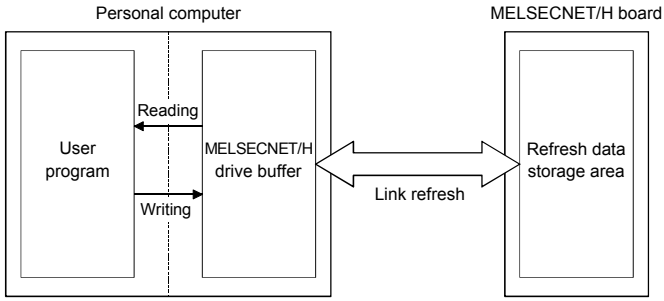
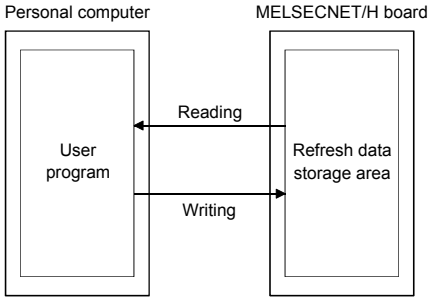
9.2.11 Driver screen operation

This operation sets the combination settings between the MELSECNET/H board and MELSECNET/10 board and sets the link device access system and the time for each type of monitoring.



Item	Content
Set Button	Enables the setting contents. The channel No. settings are reassigned after the Set button is clicked.
Default Value Button	Returns the set contents to the default values.
Combination settings with MELSECNET/10 board	Carries out settings in the case that a MELSECNET/10 board is used in the same personal computer as the MELSECNET/H board. For details concerning combination settings with the MELSECNET/10 board, see "Appendix 1, Channel No. Assignment Method. "
Channel	Sets the channel (MELSECNET/H board) which sets the link device access method.

Item	Description
The channel is used with the MELSECNET/H board.	Select if the MELSECNET/10 board installed in the personal computer is not used (default).
The channel is used from channel 51 with the MELSECNET/10 board detected automatically and the channel of the remainder is used the MELSECNET/H board.	Select if all the MELSECNET/10 boards installed in the personal computer are used. Use the channels not used by the MELSECNET/10 boards with the MELSECNET/H board.
The channel is used from channel 51 with the MELSECNET/10 board of specified I/O port and the channel of the remainder is used the MELSECNET/H board.	Select if only designated MELSECNET/10 board installed in the personal computer is used. The MELSECNET/10 board that is used is designated by that MELSECNET/H board's I/O port.

<table>
<tr><th>Item</th><th>Content</th></tr>
<tr><td>Link Device Access Method</td><td>Sets the access method to link devices (LX, LY, LB, LW).
<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Link Refresh</td><td>Makes access to the MELSECNET/H driver buffer.
Data in the MELSECNET/H driver buffer and the refresh data storage area on the MELSECNET/H board are updated by link refresh.
When secured data handling is specified with the control station parameter, data consistency ＊1 of link device data is ensured.
 
</td></tr>
<tr><td>Interval ＊2</td><td>When Link Refresh is selected, specify the link refresh interval. Link refresh is performed at intervals of the specified value x link scan time. The load of the link refresh processing by the MELSECNET/H driver on the PC decrease in inverse proportion to this value.
(Setting range: 1 to 1000, Default: 1)</td></tr>
<tr><td>Direct Access</td><td>Provided for MELSECNET/10 compatibility.
Makes access to the refresh data storage area on the MELSECNET/H board
Data consistency ＊1 of link device data is not ensured even if secured data handling is specified with the control station parameter.
 
</td></tr>
</table></td></tr>
<tr><td>Watch Dog Timer Monitoring Time Setting</td><td>Displays the current value for the watchdog timer's monitoring time and inputs the setting value. (Setting Range: 1 to 32767, Default: 250)</td></tr>
<tr><td>Transient Timeout Monitoring Time Setting</td><td>Displays the current value for the transient time out monitoring time and inputs the setting value. (Setting Range: 1 to 360, Default: 15)</td></tr>
</table>

＊1: Data consistency function prevents 2-word (32 bits) link data (e.g. current value of a positioning module) from being divided into two 1-word (16bits) data (old and new data) by certain cyclic transmission timing.

＊2: The specified interval value changes the delay time, which is duration from when link device data arrive at the refresh data storage area on the MELSECNET/H board until they are read out into the user program. (Refer to POINT.)

POINT

(1) Relation between link refresh interval value and delay time in data reading

The maximum delay time ($T_{D(MAX)}$) from when link device data arrive at the refresh data storage area on the MELSECNET/H board until they are read out into the user program can be obtained from the following formula.

Maximum delay time, $T_{D(MAX)} = T_{UP} + (n-1) \times T_{LS}$

T_{UP} : Interval for reading link device data from user program

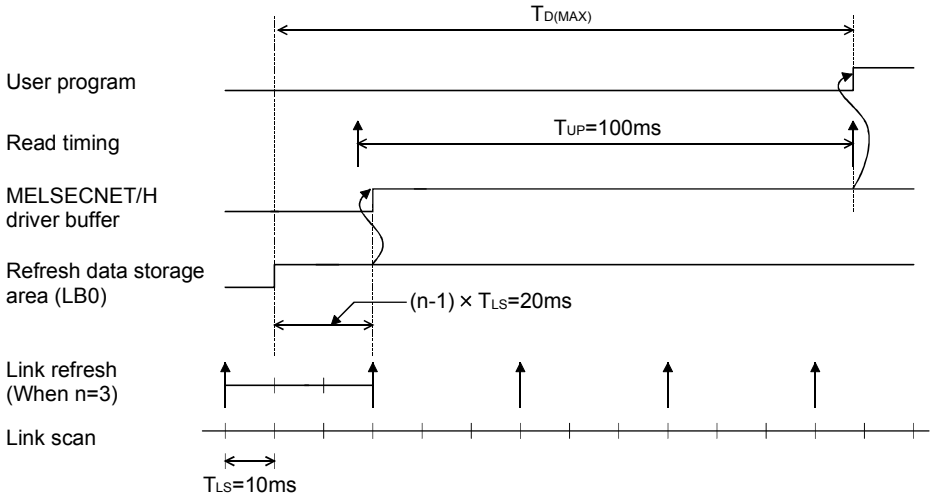
n : Specified interval value

T_{LS} : Link scan time

The following shows an example of accessing LB0 under conditions: T_{UP} = 100ms, n = 3, T_{LS} = 120ms.

The maximum delay time, $T_{D(MAX)}$ is:

$T_{D(MAX)}$ = 100ms + (3-1) x 10ms = 120ms



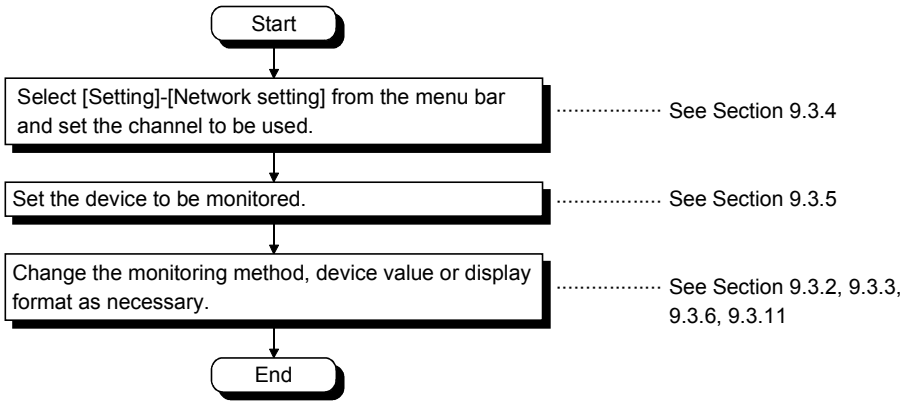
9.3 Device Monitor Utility

The following explains how to set and operate the device monitor utility.

POINT
In the device monitor utility, SB (Link special relay) and SW (Link special register) are indicated as SM and SD, respectively.

9.3.1 Operation procedure

The following explains how to operate the device monitor utility.


Start
Select [Setting]-[Network setting] from the menu bar and set the channel to be used.
See Section 9.3.4
Set the device to be monitored.
See Section 9.3.5
Change the monitoring method, device value or display format as necessary.
See Section 9.3.2, 9.3.3, 9.3.6, 9.3.11
End

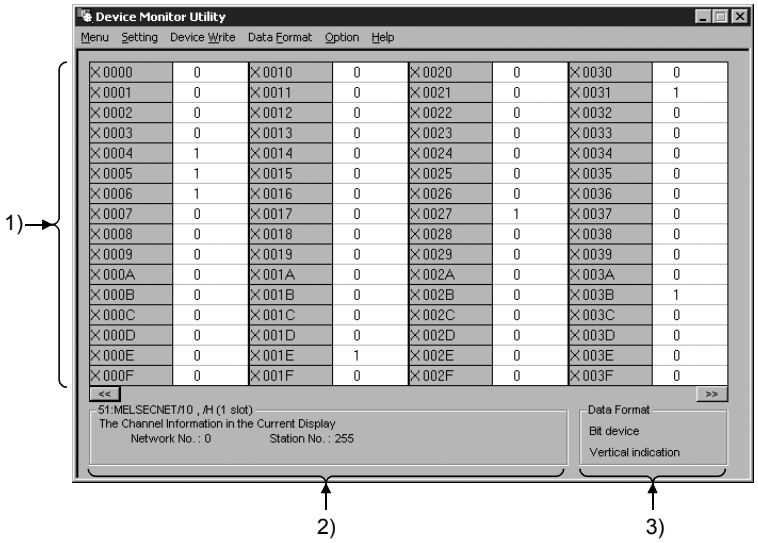
9.3.2 Setting as batch monitoring

Monitors only one device that has been specified.

(1) Selecting the menu

Select [Menu] - [Batch monitoring] from the menu bar.
(Selectable for 16-point entry monitor only.)

(2) Display screen



Item	Content
1) Device information	Displays the current device status. See Section 9.3.9 on how to change the display form.
2) Network status	Displays the network status currently set. See Section 9.3.4 on how to set the network.
3) Data format	Shows the display form and device types being displayed (word device and bit device). See Section 9.3.5 on how to change the device type. And, see Section 9.3.9 on how to change the display form.

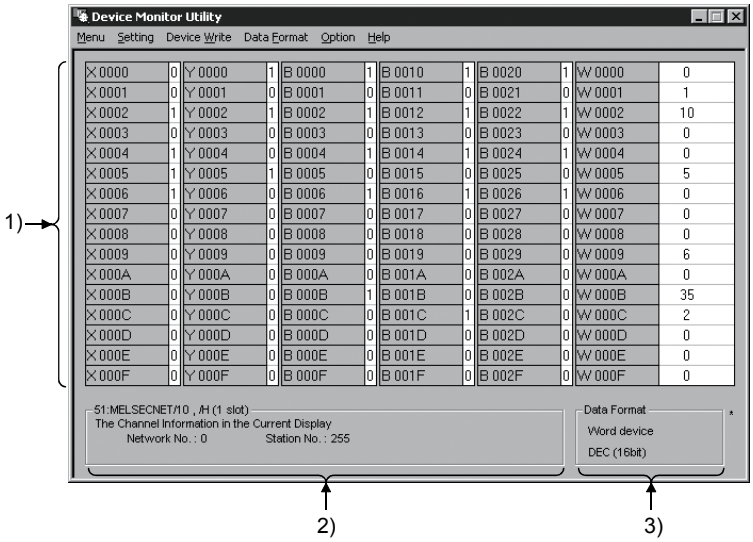
9.3.3 Setting as 16 point entry monitor

Monitors up to five bit devices and one word device simultaneously.

(1) Selecting the menu

Select [Menu] - [16 point entry monitor] from the menu bar.
(Selectable at batch monitoring only.)

(2) Display screen



Item	Content
1) Device information	Displays the current device status. See Section 9.3.9 on how to change the display form.
2) Network status	Displays the network status currently set. See Section 9.3.4 on how to set the network.
3) Data format	Shows the display form and device types being displayed (word device and bit device). See Section 9.3.5 on how to change the device type. And, see Section 9.3.9 on how to change the display form.

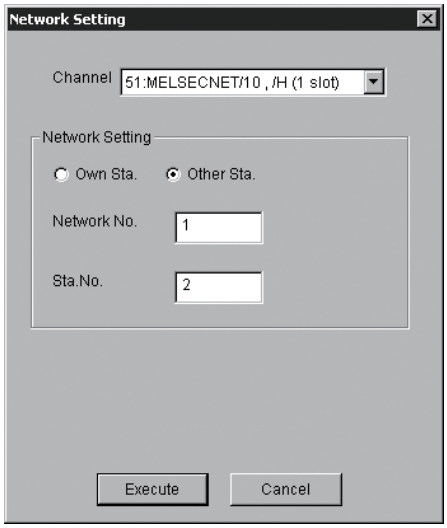
9.3.4 Setting the monitoring destination

Sets the network to be used for device monitoring.
Set the destination when starting the device monitor utility.

(1) Selecting the menu

Select [Setting] - [Network Setting] from the menu bar.

(2) Dialog box



Item	Content
Channel	Set the channel to be used.
Network Setting	Set the own and other stations along with network number and station number.
Logical Sta. No.	Set the logical station number.

POINT

(1) In case of accessing to the multiple CPU, select other station, and enter "0" to the network No. and value of "logical station number" which set in the MNETH utility to the station number.
(2) When own station is selected in the network setting, network No. "0" and station No. "255" are displayed as the network status.

9.3.5 Setting the device to be monitored

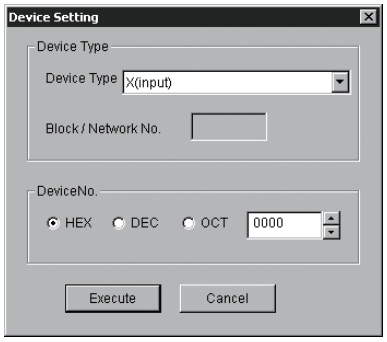
Set the device to be monitored.

(1) Selecting the menu

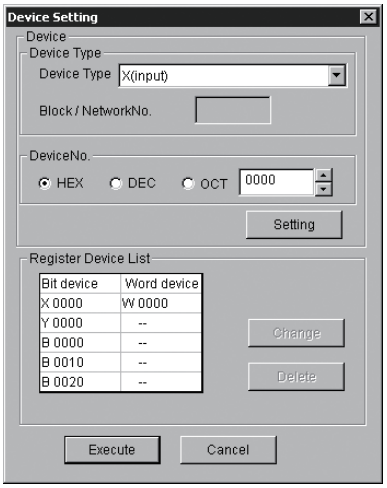
Select [Setting] - [Device setting] from the menu bar.

(2) Dialog box

For batch monitoring



For 16-point entry monitor



Item	Content
Device Type	Set the type, block number, and network number for the device to be monitored.
Device No.	Set the head number of the device to be monitored. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Register Device List	Displays a list of the devices entered.
[Setting] button	Enters the item set in Device type and Device number, then adds it to List of devices entered.
[Change] button	Select the device to be changed and click this button to change the entered data.
[Delete] button	Select the device to be deleted and click this button to delete it from List of devices entered.

POINT

The only devices that may be monitored using the 16-point entry monitor are those that have random access capability. If a device that is not capable of random-access is specified, a device type error (-3) will occur.
See Chapter 10, "ACCESSIBLE DEVICES AND RANGES" to determine whether or not a device has random-access capability.

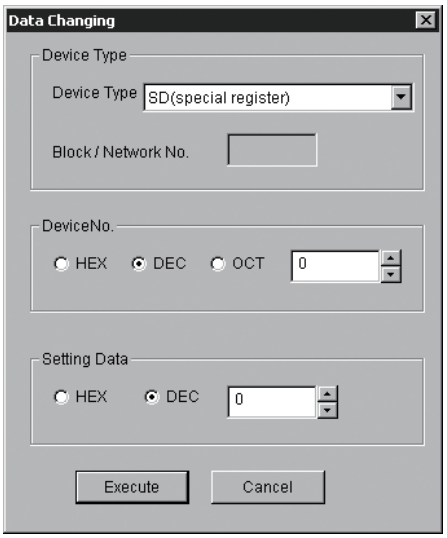
9.3.6 Changing word device values

Changes the specified word device data.

(1) Selecting the menu

Select [Device write] - [Data changing] from the menu bar.

(2) Dialog box



Item	Content
Device Type	Set the type, block number, and network number for the device for which data is to be changed.
Device No.	Set the number of the device for which data is to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting Data	Set the data to be changed. (HEX: Hexadecimal, DEC: Decimal)

DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the programmable controller in operation.
  Also, determine corrective actions for an event of data communication error between the PC and programmable controller CPU in use.

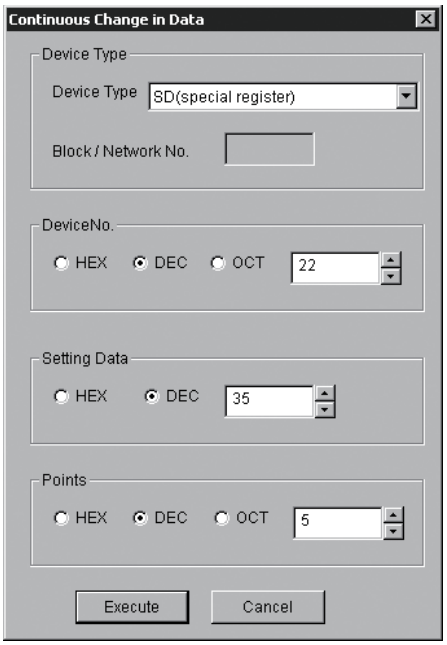
9.3.7 Changing word device values continuously

Change the specified word device data for the number of specified points being set.

(1) Selecting the menu

Select [Device write] - [Continuous Change in Data] from the menu bar.

(2) Dialog box



Item	Content
Device Type	Set the type, block number, and network number of the device for which data is to be changed.
Device No.	Set the head address of the device number to change data. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Setting Data	Set the data to be continuously changed. (HEX: Hexadecimal, DEC: Decimal)
Points	Set the number of points to perform continuos change of data. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the programmable controller in operation.
  Also, determine corrective actions for an event of data communication error between the PC and programmable controller CPU in use.

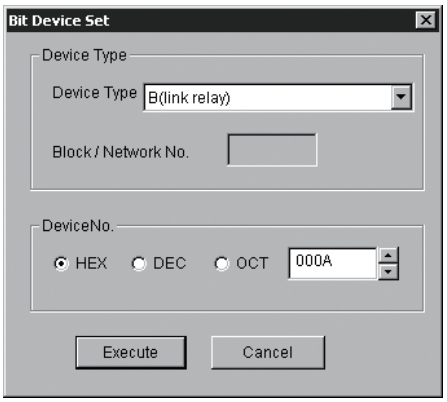
9.3.8 Tuning on/off a bit device

Turns on/off the specified bit device.

(1) Selecting the menu

Select [Device write] - [Bit device set (reset)] from the menu bar.

(2) Dialog box



Item	Content
Device Type	Sets the type, block number, and network number of the bit device to be turned on/off.
Device No.	Sets the number of the bit device to be turned on/off. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the programmable controller in operation.
  Also, determine corrective actions for an event of data communication error between the PC and programmable controller CPU in use.

9.3.9 Switching the display form

Switches the device monitoring display to the selected form.
The batch monitoring and 16-point entry monitor have different sets of selectable menus, respectively.

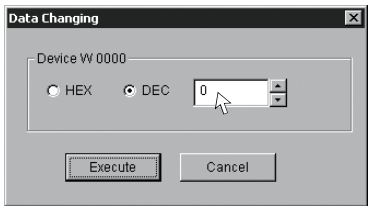
(1) Selecting the menu

Select [Display switch] - [Word (bit) device] from the menu bar.

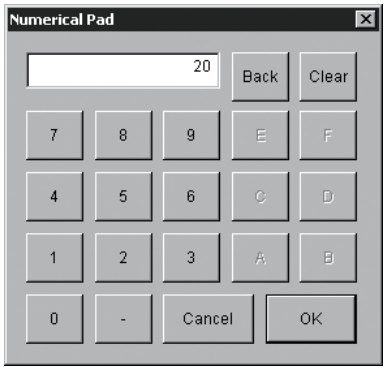
9.3.10 Numeric value input pad

A numeric value input pad is available for setting device values and other numeric parameters. To display the numeric value input pad, select [Options] - [Numerical pad] from the menu bar.

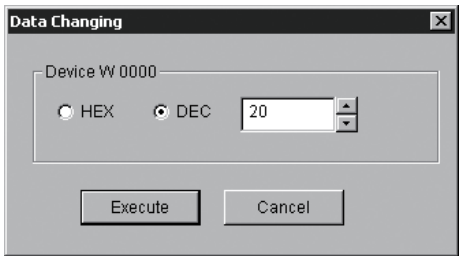
1. Click inside the numeric value input field.



2. The numeric value input pad is displayed. Use the buttons to enter a desired value, and then click the OK button.



3. The value is entered in the system.



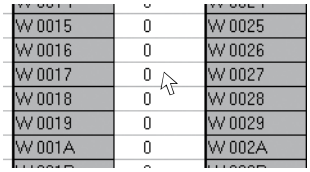
9.3.11 Other operations

Double-clicking the device number on the screen while monitoring changes data in word device and turns on/off the bit device.

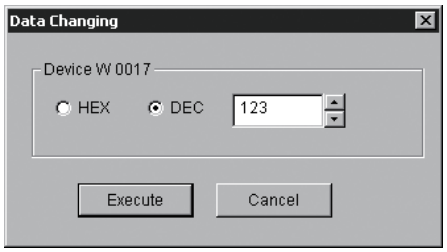
(1) Word device

The following explains how to change the word device.
(Only when the display form is 16 bit.)

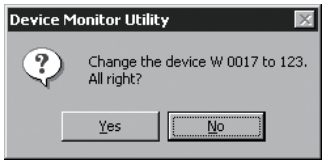
1. Double-click the number of the word device to be changed.



2. As the following dialog box is displayed, set a desired value.
   Click the [Execute] button.



3. Select [Yes] in the dialog box shown below if the change is acceptable.
   Select [No] to cancel the operation.



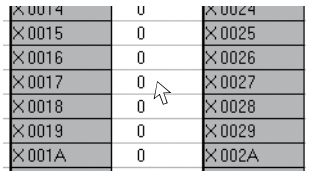
DANGER

- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the programmable controller in operation.
  Also, determine corrective actions for an event of data communication error between the PC and programmable controller CPU in use.

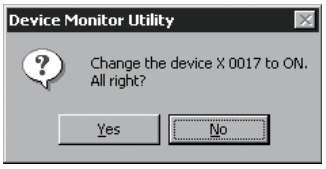
(2) Bit device

The following explains how to turn on/off the bit device.
However, this operation is available only when the display orientation is "Portrait."

1. Double-click the number of the bit device to be changed.



2. Select [Yes] in the dialog box shown below if the change is acceptable.
   Select [No] to cancel.



DANGER

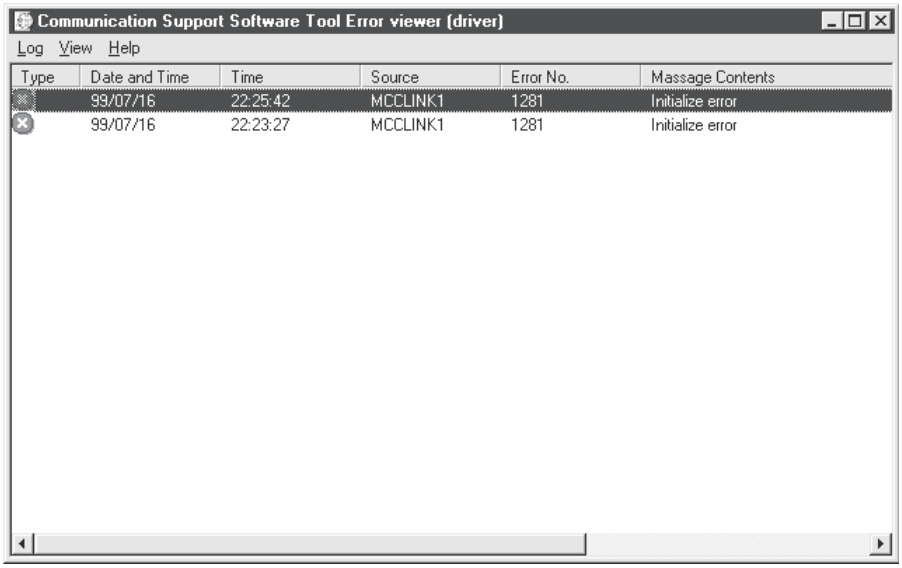
- Configure an interlock circuit in the sequence program so that the entire system works safely at all times for data change control to the programmable controller in operation.
  Also, determine corrective actions for an event of data communication error between the PC and programmable controller CPU in use.

9.4 Error Viewer Operation

The following explains how to set and operate the error viewer.

9.4.1 Screen description

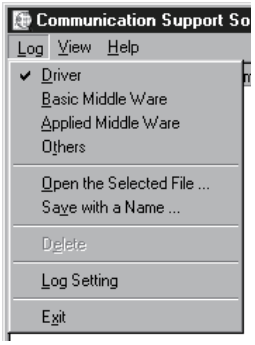
The following explains the error viewer screen.

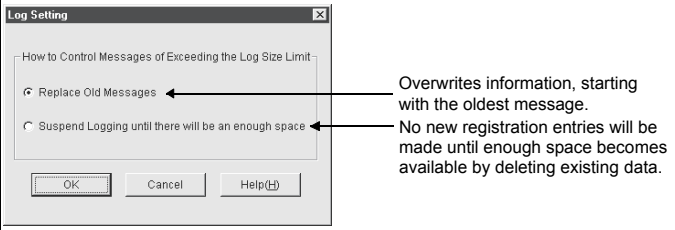


Item	Content
Type	The error types are indicated by the symbols shown below. : Normal message (Indicates messages generated in normal processing.) : Warning message (Messages generated to call attention even though it is not an error.) : Error message (Indicates the details of errors generated in each module. Double-click the line showing this symbol to see a detailed message, then promptly correct the cause of the error.)
Date and Time	Displays the date of error occurrence.
Time	Displays the time of error occurrence.
Source	Displays the source of error occurrence.
Error No.	Displays the error number.
Message Contents	Displays the details of error occurrence.

9.4.2 Log menu

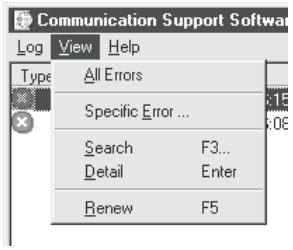
The following explains the contents of log menu.

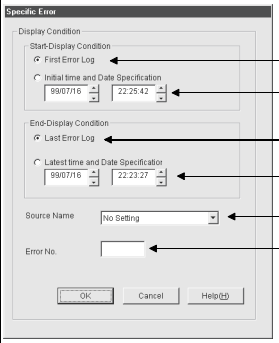
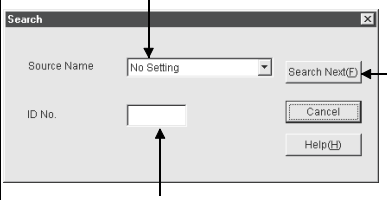


Item	Content
Selecting error-entry source type	Select the error-entry source type to be displayed in the error viewer. The currently selected items are checked. • Driver : Displays messages generated by drivers such as common memory device. • Basic Middle Ware : Displays messages generated by the common memory data server and tag control process. • Applied Middle Ware : Displays messages generated by MX Chart and MX Monitor. • Others : Displays messages generated by the application packages.
Open the Selected File	Open the error log file (*.ELF).
Save with a Name	Save the error log data of the error entry source (driver, etc. ...) currently being selected to the specified file.
Delete	Erase the error log data of the error entry source (driver, etc. ...) currently being displayed. Follow the instructions displayed on the dialog box.
Log Setting	Select a processing method to be used when the number of error logs exceeds the maximum entry. 
Exit	End the error viewer.

9.4.3 Display menu

The following explains the contents of display menu.



Item	Content
All Errors	Displays all error occurrences for each type of error entry source.
Specific Error	Sets the errors to be displayed on the screen according to the conditions specified in the dialog box shown below.  Displays errors from the first error log. Displays errors from the designated date. Displays errors until the last error log. Displays errors until the designated date. Displays errors having only the designated source name. Displays errors having only the designated error number.
Search	Search the error information of the source name and error code from the error log data currently being displayed, using the dialog box shown below. (Pressing the F3 key will do the same) Specifies the name of the source to be searched.  Searches the next error information. Inputs the error code to be searched.

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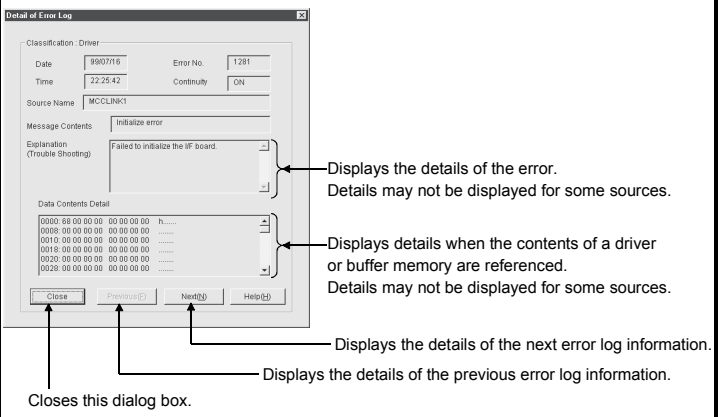
Item	Content
Details	Displays the details of the error log currently being selected (Pressing "Enter" after selecting a display item will do the same). 
Renew	Updates the data currently being displayed.

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10 ACCESSIBLE DEVICES AND RANGES

This chapter explains the devices and ranges that can be accessed during MELSECNET/H board communication.

10.1 Accessible Devices

This section explains the devices that can be accessed during MELSECNET/H board communication.

POINT
The "Batch" in the following table indicates Batch Read and Batch Write. The "Random" in the table indicates Random Read, Random Write, Bit Set, or Bit Reset.

10.1.1 Host (personal computer (control/normal station equivalent))

Device		Accessible/not accessible
X	Batch	○
	Random	
Y	Batch	○
	Random	
SB	Batch	○
	Random	
SW	Batch	○
	Random	
B	Batch	○
	Random	
W	Batch	○
	Random	
RECV function for Q/QnA	Batch	○
	Random	×

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10.1.2 Other station

Device		Access destination							
		A1N	A0J2H A1S(H) A1SJ(H) A2C(J) A2N(-S1) A2S(H)	A2A(-S1) A2U(-S1) A2AS(-S1) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH Q12PRH Q25PRH	Q00UJ Q00U Q01U Q02U Q03UD Q04UDH Q06UDH Q10UDH Q13UDH Q20UDH Q26UDH Q03UDE Q04UDEH Q06UDEH Q10UDEH Q13UDEH Q20UDEH Q26UDEH	Personal computer
X	Batch	○	○	○	○	○	○		×
	Random								
Y	Batch	○	○	○	○	○	○		×
	Random								
L	Batch	○	○	○	○	○	○		×
	Random								
M	Batch	○	○	○	○	○	○		×
	Random								
Special M (SM), SB	Batch	○	○	○	○	○	○		×
	Random								
F	Batch	○	○	○	○	○	○		×
	Random								
T (contact)	Batch	○	○	○	○	○	○		×
	Random						×		
T (coil)	Batch	○	○	○	○	○	○		×
	Random						×		
C (contact)	Batch	○	○	○	○	○	○		×
	Random						×		
C (coil)	Batch	○	○	○	○	○	○		×
	Random						×		
T (present value)	Batch	○	○	○	○	○	○		×
	Random								
C (present value)	Batch	○	○	○	○	○	○		×
	Random								
D	Batch	○	○	○	○	○	○		×
	Random								
Special D (SD), SW	Batch	○	○	○	○	○	○		×
	Random								
T (set value main)	Batch	○	○	○	○	○	×		×
	Random	×	×	×	×	×			
T (set value sub 1)	Batch	×	×	○ *1	○	○	×		×
	Random			×	×	×			
T (set value sub 2)	Batch	×	×	×	×	○	×		×
	Random					×			
T (set value sub 3)	Batch	×	×	×	×	○	×		×
	Random					×			

*1: Cannot be accessed with the A2ACPU(-S1).

Device		Access destination							
		A1N	A0J2H A1S(H) A1SJ(H) A2C(J) A2N(-S1) A2S(H)	A2A(-S1) A2U(-S1) A2AS(-S1) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH Q12PRH Q25PRH	Q00UJ Q00U Q01U Q02U Q03UD Q04UDH Q06UDH Q10UDH Q13UDH Q20UDH Q26UDH Q03UDE Q04UDEH Q06UDEH Q10UDEH Q13UDEH Q20UDEH Q26UDEH	Personal computer
C (set value main)	Batch	○	○	○	○	○	×		×
	Random	×	×	×	×	×			
C (set value sub 1)	Batch	×	×	○ *1	○	○	×		×
	Random			×	×	×			
C (set value sub 2)	Batch	×	×	×	×	○	×		×
	Random					×			
C (set value sub 3)	Batch	×	×	×	×	○	×		×
	Random					×			
A	Batch	○	○	○	○	○	×		×
	Random								
Z	Batch	○	○	○	○	○	○		×
	Random								
V (index register)	Batch	○	○	○	○	○	×		×
	Random								
R (file register)	Batch	×	○	○	○	○	○ *2		×
	Random								
ZR (file register)	Batch	×	×	×	×	×	○ *2		×
	Random								
ER (extended file resister)	Batch	×	○	○	○	○	○ *2		×
	Random								
B	Batch	○	○	○	○	○	○		×
	Random								
W	Batch	○	○	○	○	○	○		×
	Random								
Q/QnA link special relay (within Q/QnACPU)	Batch	×	×	×	×	×	○		×
	Random								
Retentive timer (contact)	Batch	×	×	×	×	×	○		×
	Random						×		
Retentive timer (coil)	Batch	×	×	×	×	×	○		×
	Random						×		
Q/QnA link special register (within Q/QnACPU)	Batch	×	×	×	×	×	○		×
	Random								
Q/QnA edge relay (within Q/QnACPU)	Batch	×	×	×	×	×	○		×
	Random								
Host random-access buffer	Batch	×	×	×	×	×	×		×
	Random								
Retentive timer (present value)	Batch	×	×	×	×	×	○		×
	Random								

*1: Cannot be accessed with the A2ACPU(-S1).
*2: Cannot be accessed with the Q00JCPU.

Device		Access destination							
		A1N	A0J2H A1S(H) A1SJ(H) A2C(J) A2N(-S1) A2S(H)	A2A(-S1) A2U(-S1) A2AS(-S1) A2USH-S1 Q02(H)-A Q06H-A	A3N A3A A3U	A4U	Q2A(-S1) Q3A Q4A Q4AR Q2AS(-S1) Q2ASH(-S1)	Q00J Q00 Q01 Q02(H) Q06H Q12H Q25H Q12PH Q25PH Q12PRH Q25PRH	Q00UJ Q00U Q01U Q02U Q03UD Q04UDH Q06UDH Q10UDH Q13UDH Q20UDH Q26UDH Q03UDE Q04UDEH Q06UDEH Q10UDEH Q13UDEH Q20UDEH Q26UDEH	Personal computer
Host link register (for transmission)	Batch	×	×	×	×	×	×		×
	Random								
Host link register (for reception)	Batch	×	×	×	×	×	×		×
	Random								
Q/QnA SEND function (Arrival acknowledgment)	Batch	×	×	×	×	×	○		○
	Random						×		×
Q/QnA SEND function (Arrival acknowledgment)	Batch	×	×	×	×	×	○		○
	Random						×		×
Direct link input	Batch	×	×	×	×	×	○		×
	Random								
Direct link output	Batch	×	×	×	×	×	○		×
	Random								
Direct link relay	Batch	×	×	×	×	×	○		×
	Random								
Direct link register	Batch	×	×	×	×	×	○		×
	Random								
Direct link special relay (network module side)	Batch	×	×	×	×	×	○		×
	Random								
Direct link special register (network module side)	Batch	×	×	×	×	×	○		×
	Random								
Special direct buffer register	Batch	×	×	×	×	×	○		×
	Random						×		
EM	Batch	×	×	×	×	×	×		○ *3
	Random								×
ED	Batch	×	×	×	×	×	×		○ *3
	Random								×

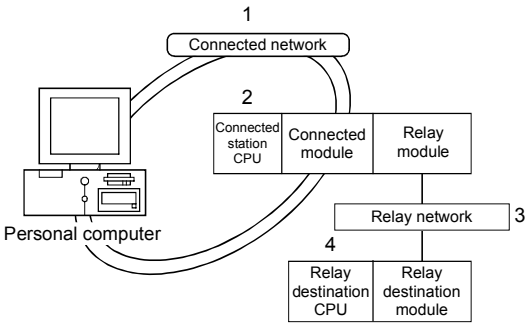
*3: Accessible only when the operating system is Microsoft® Windows NT® Workstation Operating System Version 4.0 and MX Links (later than SW2D5F-CSKP-E) is operating.

10.2 Accessible Range

The following describes the ranges that can be accessed during MELSECNET/H board communication.

POINT
This section explains the accessible range when using the MELSEC data link library. See "GX Developer Operating Manual" for the accessible range when using GX Developer.

(1) Configuration



(2) Accessibility table

The following table shows the accessibility. All host board and connected station CPU can be accessed.
Relay destination CPU shows the accessibility by ○ (accessible) or × (not accessible).

1. Connected network	2. Connected station CPU	3. Relay network	4. Relay destination CPU			
			QCPU ＊2 (Q mode)	QCPU (A mode)	QnACPU	ACPU
MELSECNET/H	QCPU ＊2 (Q mode)	CC IE Controller network	○ ＊1	×	×	×
		MELSECNET/H	○ ＊1	×	×	×
		MELSECNET/10	○ ＊1	○	○	○
		MELSECNET (II)	×	×	×	×
		Ethernet	×	×	×	×
		Computer link	×	×	×	×
		CC-Link	×	×	×	×
MELSECNET/10	QCPU ＊2 (Q mode)	MELSECNET/H	○ ＊1	×	×	×
		MELSECNET/10	○ ＊1	○	○	○
		MELSECNET (II)	×	×	×	×
		Ethernet	×	×	×	×
		Computer link	×	×	×	×
		CC-Link	×	×	×	×
	QnACPU	MELSECNET/H	×	×	×	×
		MELSECNET/10	○	○	○	○
		MELSECNET (II)	×	×	×	×
		Ethernet	×	×	×	×
		Computer link	×	×	×	×
		CC-Link	×	×	×	×
	QCPU (A mode) ACPU	MELSECNET/H	×	×	×	×
		MELSECNET/10	○	○	○	○
		MELSECNET (II)	×	×	×	×
		Ethernet	×	×	×	×
		Computer link	×	×	×	×
		CC-Link	×	×	×	×

○ : Accessible, × : Not accessible

＊1: No access is allowed if the connected station's CPU is the Q00J/Q00/Q01CPU.

＊2: In the redundant programmable controller system, the MELSECNET/H Extended mode cannot be used.

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MEMO

10 - 6

11 MELSEC DATA LINK LIBRARY

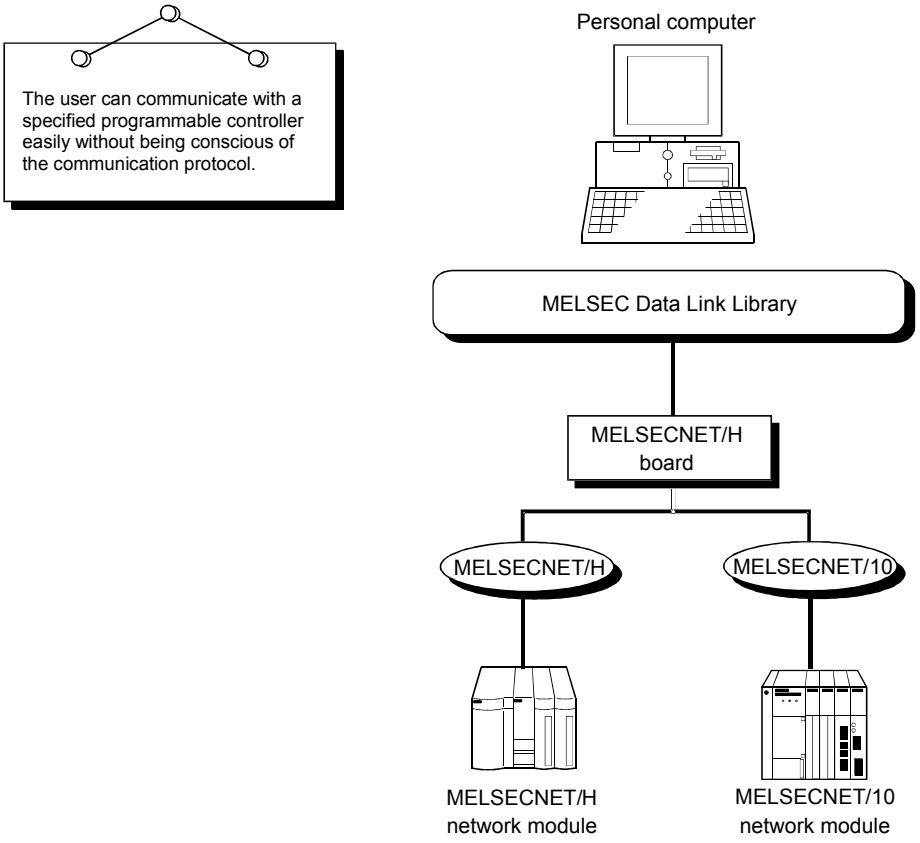
This chapter describes the functional overview offered by the library.

REMARK

The screens of Windows® 95 Operating System are used in the explanation.
Please note that these screens are slightly different from other Operating systems.

11.1 Overview of the MELSEC Data Link Library

These functions are used when creating a user program that communicates with a programmable controller CPU. With the functions, the user can perform communication without being conscious of the hardware type on the opposite side or the communication protocol.


The user can communicate with a specified programmable controller easily without being conscious of the communication protocol.
Personal computer
MELSEC Data Link Library
MELSECNET/H board
MELSECNET/H
MELSECNET/10
MELSECNET/H network module
MELSECNET/10 network module

11.2 Function List

The following table lists the MELSEC Data Link Library that is provided with the MELSECNET/H board.

Function name	Description
mdOpen	Opens a communication line.
mdClose	Closes a communication line.
mdSendEx	Batch writes devices. (Extended function)
mdReceiveEx	Batch reads devices. (Extended function)
mdRandWEx	Writes devices randomly. (Extended function)
mdRandREx	Reads devices randomly. (Extended function)
mdDevSetEx	Sets a bit device. (Extended function)
mdDevRstEx	Resets a bit device. (Extended function)
mdTypeRead	Reads the type of programmable controller CPU.
mdControl	Remote RUN/STOP/PAUSE.
mdInit	Refreshes the programmable controller device address.
mdBdRst	Resets the board itself.
mdBdModSet	Sets the mode of the board itself.
mdBdModRead	Reads the mode of the board itself.
mdBdLedRead	Reads the LED information of the board itself.
mdBdSwRead	Reads the switch status of the board itself.
mdBdVerRead	Reads the version information of the board itself.
mdSend	Batch writes devices.
	Sends data (SEND function). ＊1
mdReceive	Batch reads devices.
	Receives data (RECV function). ＊1
mdRandW	Writes devices randomly.
mdRandR	Reads devices randomly.
mdDevSet	Sets a bit device.
mdDevRst	Resets a bit device.

＊1 : Q/QnA dedicated instruction

POINT

See the Help for MELSEC Data Link Function for the details of the functions.

11.3 Settings for Using Functions

This section describes the setting operation in order to use functions.

POINT
For the combination of operating system and programming language, refer to the Microsoft technical information.

11.3.1 When using Visual Basic® 5.0 and Visual Basic® 6.0

The following describes the setting operation when using Visual Basic® 5.0 and Visual Basic® 6.0.

1. Start Visual Basic® 5.0 or Visual Basic® 6.0 and select [Project] - [Add standard module] menu.
2. Select the "Existing files" tab and select "MDFUNC.BAS."
   "MDFUNC.BAS" has been saved in the following directory during installation:
   <User-specified folder> - <COMMON> - <INCLUDE>

11.3.2 When using Visual C++® 5.0 and Visual C++® 6.0

The following describes the setting operation when using Visual C++® 5.0 and Visual C++® 6.0.

(1) When setting an include file

1. Start Visual C++® 5.0 or Visual C++® 6.0 and select [Tool] - [Option] menu.
2. Select the "Directory" tab and set the directory type to "Include files."
3. Double-click the item to be set and reference the folder containing the include file.
   MDFUNC.H has been saved in the following directory during installation:
   <User-specified folder> - <COMMON> - <INCLUDE>
4. Add "#include<mdfunc.h>" at the beginning of your program.

(2) When setting a library file

1. Start Visual C++® 5.0 or Visual C++® 6.0 and select [Tool] - [Option] menu.
2. Select the "Directory" tab, set "Directory to be displayed" to "Library file," and reference the folder containing the library file, as in step (1) above.
   "MDFUNC32.LIB" is stored in
   <User-specified folder>-<COMMON>-<LIB>
   during installation.
3. Open the workspace to create and select [Project] - [Set] menu.
4. Select the "Link" tab, set "General" as the category, then type "mdfunc32.lib" in the object/library module field.

11.3.3 When using Visual Basic® .NET 2003

The following describes the setting operation when using Visual Basic® .NET 2003.

1. Start Visual Basic® .NET 2003 and select [File] – [Add Existing Item].
2. In the [Add Existing Item] dialog box, select "Mdfunc.vb".
   "Mdfunc. vb" has been saved in the following directory during installation:
   <User-specified folder> - <COMMON> - <INCLUDE>.

11.3.4 When using Visual C++® .NET 2003

The following describes the setting operation when using Visual C++® .NET 2003.

(1) When setting an include file

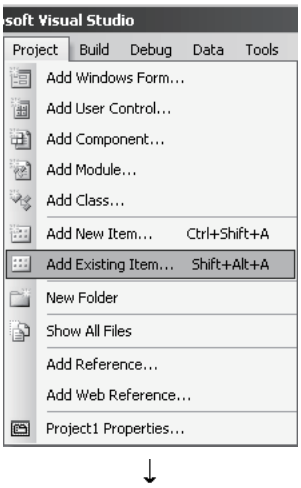
1. Start Visual C++® .NET 2003 and select [Tools] – [Options].
2. In the folder area of the Options dialog box, select <Project> - "VC++ directory".
   Set the directory type to "Include files" and click ***.
3. Reference the folder containing the include file.
   "Mdfunc.h" has been saved in the following directory during installation:
   <User-specified folder> - <COMMON> - <INCLUDE>.

(2) Library file setting

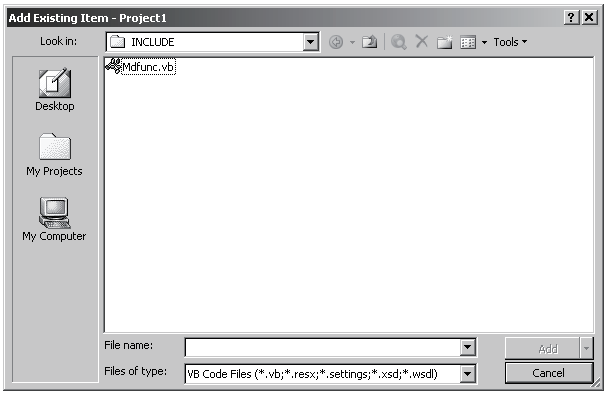
1. Start Visual C++® .NET 2003 and select [Tools] – [Options].
2. In the folder area of the Options dialog box, select <Project> - "VC++ directory".
   Set the directory type to "Library files" and click ***.
3. Reference the folder containing the library file.
   "Mdfunc32.lib" has been saved in the following directory during installation:
   <User-specified folder> - <COMMON> - <LIB>.

11.3.5 When using Visual Basic® 2005

This section explains the setting operation when using Visual Basic® 2005.



1. Start Visual Basic® 2005 and select [Project] - [Add Existing Item].

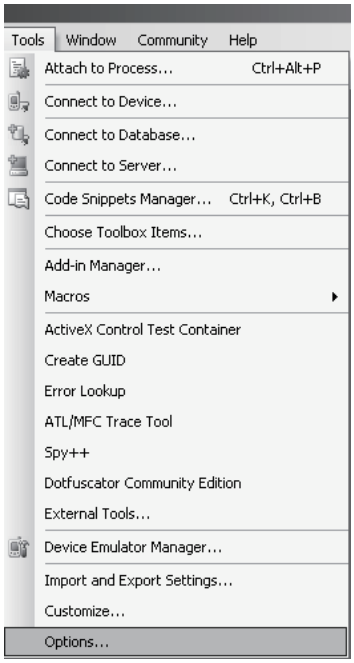


2. In the "Add Existing Item" dialog box, select "Mdfunc.vb". "Mdfunc.vb" is stored in the following directory at installation.
<User-specified folder> - <COMMON> - <INCLUDE>

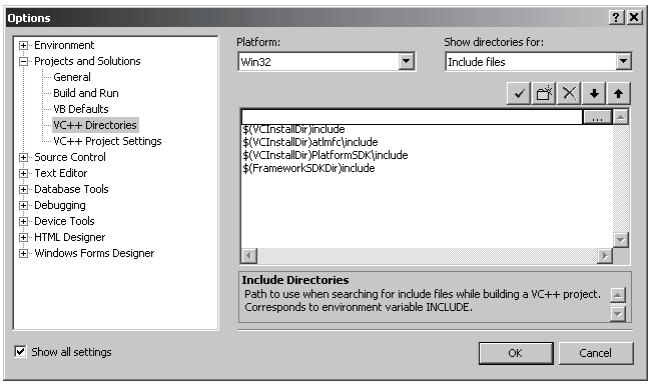
11.3.6 When using Visual C++® 2005

This section explains the setting operation when using Visual C++ 2005.

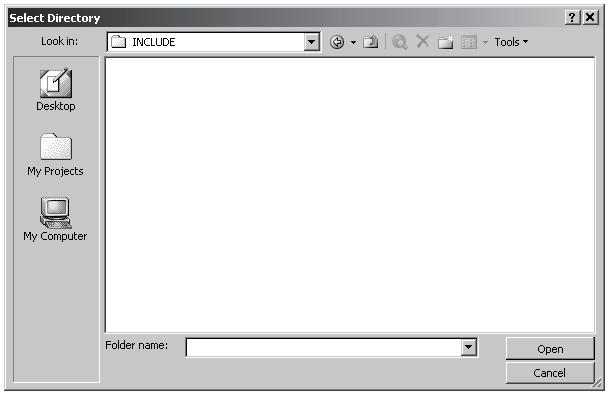
(1) Setting include files



1. Start Visual C++® 2005 and select [Tools] - [Options].



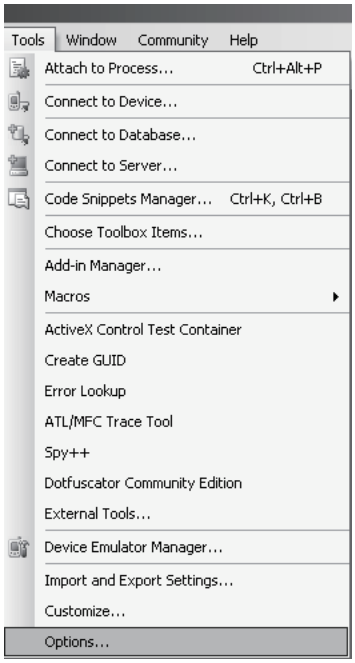
2. In the folder area of the "Options" dialog box, select <Projects and Solutions> - "VC++ Directories".
   Set the "Show directories for" item to "Include files" and click the button.



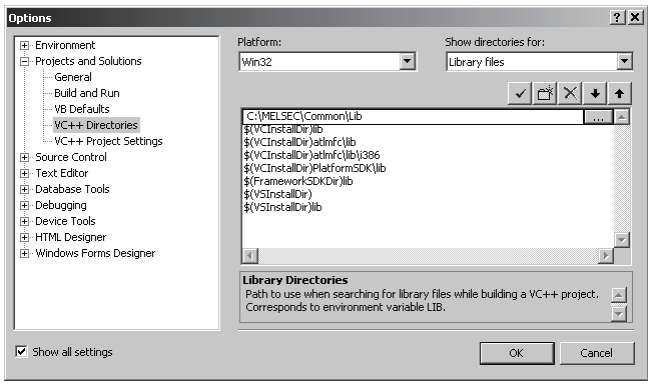
3. Browse the folder containing include files.
   "Mdfunc.h" is stored in the following directory at installation.
   <User-specified folder> - <COMMON> - <INCLUDE>

4. Add #include<Mdfunc.h> at the beginning of the program.

(2) Setting library files



1. Start Visual C++® 2005 and select [Tools] - [Options].



2. In the folder area of the "Options" dialog box, select <Projects and Solutions> - "VC++ Directories".
   Set the "Show directories for" item to "Library files", and browse the folder containing the library file as in (1) on the previous page.
   "Mdfunc32.lib" is stored in the following directory at installation.
   <User-specified folder> - <COMMON> - <LIB>

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(From the previous page)

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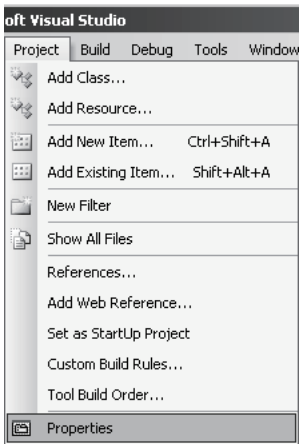

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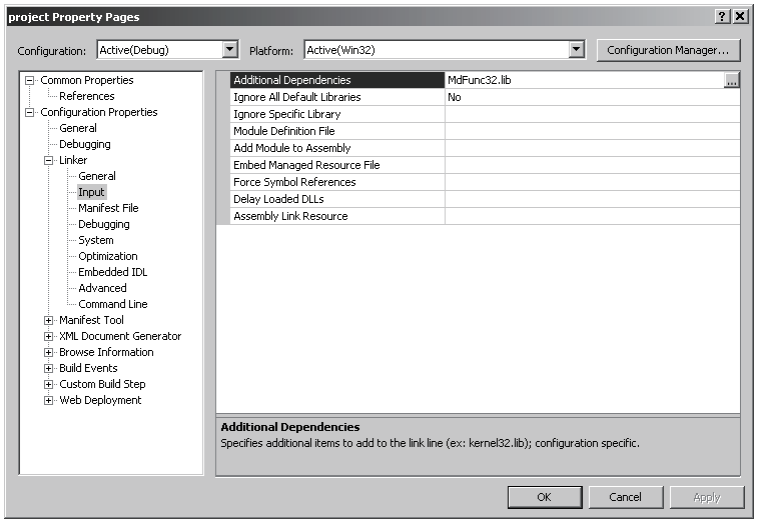


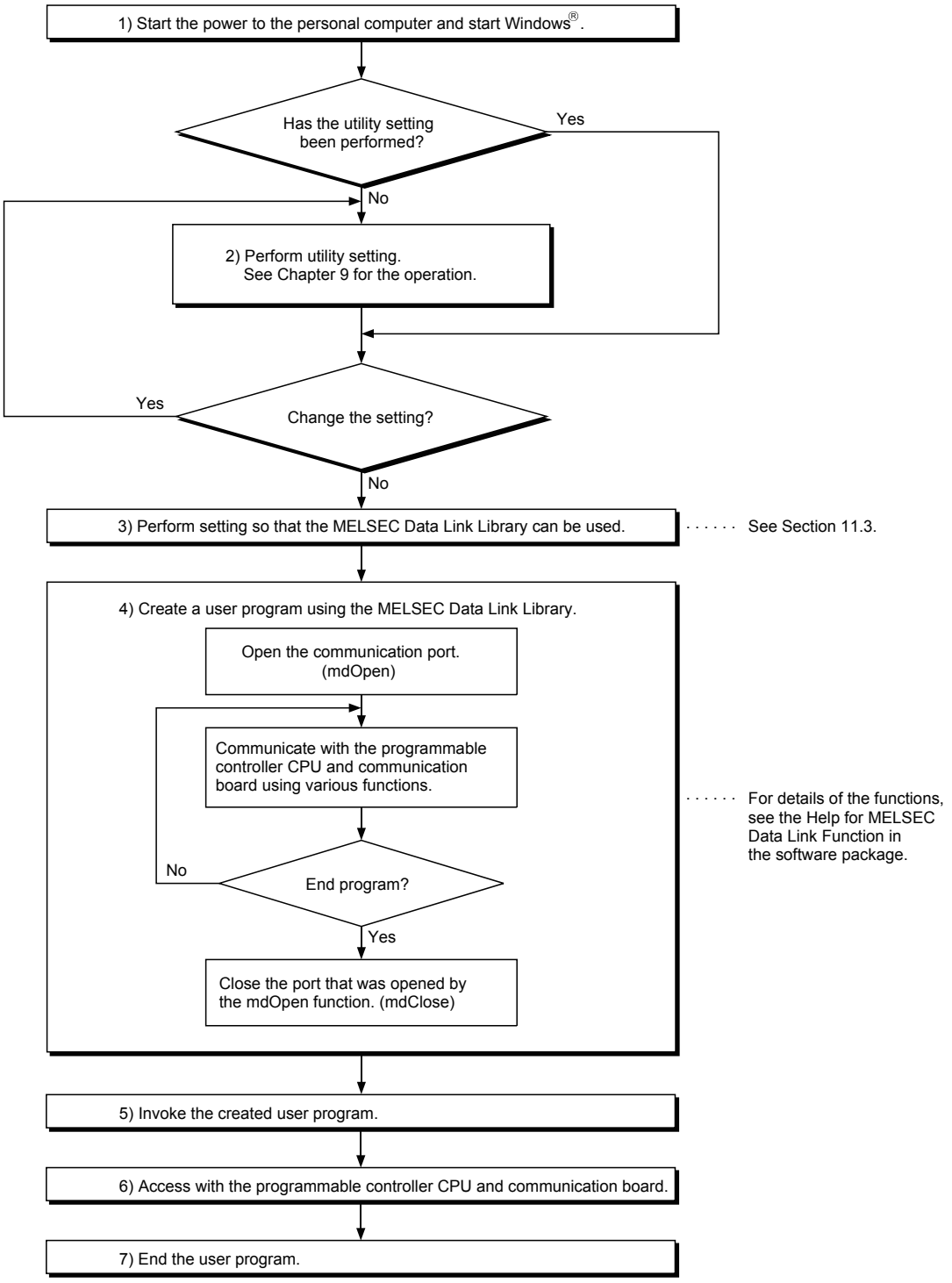
3. Open the project to be created and select [Project] - [Properties].

4) In the folder area of the "Property" dialog box, select [Configuration Properties] - [Linker] - "Input". Enter "MdFunc32.lib" in the "Additional Dependencies" field.

11.4 Procedure for Programming

The following describes the procedure for programming using the MELSEC Data Link Library.
In this section, it is assumed that the software package has already been installed.

(1) Procedure for Programming


1) Start the power to the personal computer and start Windows®.
Has the utility setting been performed?
Yes
No
2) Perform utility setting.
See Chapter 9 for the operation.
Change the setting?
Yes
No
3) Perform setting so that the MELSEC Data Link Library can be used.
See Section 11.3.
4) Create a user program using the MELSEC Data Link Library.
Open the communication port. (mdOpen)
Communicate with the programmable controller CPU and communication board using various functions.
End program?
No
Yes
Close the port that was opened by the mdOpen function. (mdClose)
For details of the functions, see the Help for MELSEC Data Link Function in the software package.
5) Invoke the created user program.
6) Access with the programmable controller CPU and communication board.
7) End the user program.

(2) Cautions when using the MELSEC Data Link Library.

(a) Cautions when programming

1) Perform the processing for opening and closing a communication function (mdOpen, mdClose) only once at the beginning and end of a user program. Repeating opening and closing of a communication line for each transaction will degrade the communication performance.

2) When accessing the PLC CPU and network board again with the user created program, they can be accessed by performing steps 5) to 7) only.

3) When a function is first executed by adding a corresponding device, this acquires PLC information in detail.
For that reason, the initial function execution time becomes long.

4) When accessing multiple remote stations simultaneously from the same PC using the MNETH utility, Device Monitor utility, user program or Mitsubishi's software package (such as MX Links), limit the number of stations to be accessed to 256 or less.
If 257 or more remote stations are accessed simultaneously, communication performance may deteriorate.

5) When creating a user program for debugging using Visual C++® 6.0, do not define the buffer to be used by mdReceive in static.

6) The mdClose function must be executed at the end process of the user program.
Ending the user program without executing the mdClose function may have effects on the user program which uses other MELSEC data link library, MNETH utility, device monitor utility and Mitsubishi software packages (MX Component).

(b) Cautions when accessing a master board device and another station's programmable controller device

It is necessary to establish an interlock through a link state between the host and the other station. Data become valid only in the case where the conditions shown below are established.

<In the case of MELSECNET/H and MELSECNET/10>

1) Access to a cyclic device (master board X, Y, B, W)
Writing data to and reading them from the host cyclic device is valid only if the host's handshaking status (SB47) and the host's data link status (SB49) bit goes Off (Normal) and the host's module status (SB20) bit goes Off (Normal). However, even if the above conditions are not established, writing and reading processing to the MELSECNET/H board ends normally.

2) Other station transient access (remote operation of and device access to other station's programmable controller CPU.)
In addition to a device which checks the cyclic device's access, access is possible if the accessing station's handshake status bit (the bits pertaining to the opposite station being communicated with when SW70 to 73 are read by the host) are Off (Normal) and the cyclic status bit (the bits pertaining to the opposite station being communicated with when SW74 to 77 are read by the host) are Off (Executing cyclic transmission).

11.5 Channel

The following is the channel used by the MELSEC data-link library:

Number	Channel name	Description
51 to 54	MELSECNET/10, /H (1 slot to 4 slot)	Used when communication is performed via the MELSECNET/H board and MELSECNET/10 board. The channels are set from 51 in order of the PCI slot number of the personal computer. ＊1

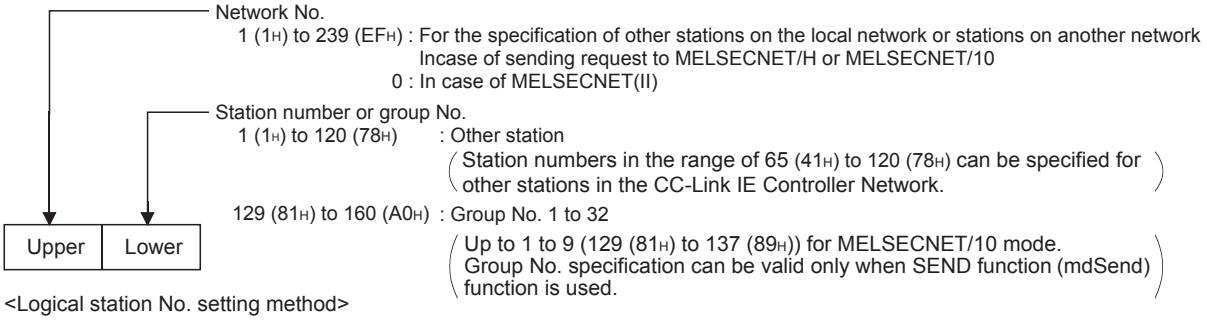
＊1: Check the channel No. in the "Board List" screen in the MNETH utility. See Appendix 1, "Channel No. Assignment Method" concerning the method used to assign the channel No.

11.6 Station Number Settings

The following lists the station numbers set via functions.

Communication	Station number specification
MELSECNET/H	Host: 255 (FFH) Other station: ＊1 Designation of all station : F0H
MELSECNET/10	

＊1:


Network No.
1 (1H) to 239 (EFH) : For the specification of other stations on the local network or stations on another network
Incase of sending request to MELSECNET/H or MELSECNET/10
0 : In case of MELSECNET(II)
Station number or group No.
1 (1H) to 120 (78H) : Other station
Station numbers in the range of 65 (41H) to 120 (78H) can be specified for other stations in the CC-Link IE Controller Network.
129 (81H) to 160 (A0H) : Group No. 1 to 32
Up to 1 to 9 (129 (81H) to 137 (89H)) for MELSECNET/10 mode.
Group No. specification can be valid only when SEND function (mdSend) function is used.
Upper
Lower

<Logical station No. setting method>

Set "0" in the upper byte of the above station No. (network No.) and designate the logical station No. in the lower byte (station No.).
The logical station No. designation range is 65 (41H) to 239 (EFH).

11.7 Network Number and Station Number Specification for Extended Functions

(1) The following table shows the network numbers used for extended functions.

Communication	Network number specification
MELSECNET/H	1 (1H) to 239 (EFH): For specifying other stations on the local network and stations on the other network. When sending a request to MELSECNET/H or MELSECNET/10.
MELSECNET/10	

(2) The following table shows the station numbers used for extended functions.

Communication	Station number specification
MELSECNET/H	Host: 255 (FFH) Other station: 1 (1H) to 120 (78H) ＊1 Designation of all station: F0H
MELSECNET/10	Group No. 1 to 32: 129 (81H) to 160 (A0H) (Note that the range of group number is limited within 1 to 9 (129 (81H) to 137 (89H)) in MELSECNET/10 mode. Group numbers can be specified only when using the mdSend function.)

＊1: Station numbers in the range of 65 (41H) to 120 (78H) can be specified for other stations in the CC-Link IE Controller Network.

11.8 Device Types

Any code number or device name can be specified for functions as the device type.

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
1	1H	DevX	X
2	2H	DevY	Y
3	3H	DevL	L
4	4H	DevM	M
5	5H	DevSM	Special M (SM), SB (link special B for MELSECNET/10, MELSECNET/H and CC-Link)
6	6H	DevF	F
7	7H	DevTT	T (contact)
8	8H	DevTC	T (coil)
9	9H	DevCT	C (contact)
10	AH	DevCC	C (coil)
11	BH	DevTN	T (present value)
12	CH	DevCN	C (present value)
13	DH	DevD	D
14	EH	DevSD	Special D (SD), SW (link special W for MELSECNET/10, MELSECNET/H and CC-Link)
15	FH	DevTM	T (set value main)
16	10H	DevTS	T (set value sub 1)
16002	3E82H	DevTS2	T (set value sub 2)
16003	3E83H	DevTS3	T (set value sub 3)
17	11H	DevCM	C (set value main)
18	12H	DevCS	C (set value sub 1)
18002	4652H	DevCS2	C (set value sub 2)
18003	4653H	DevCS3	C (set value sub 3)
19	13H	DevA	A
20	14H	DevZ	Z
21	15H	DevV	V (index register)
22	16H	DevR	R (file register)
220	DCH	DevZR	ZR (file register)
22000 to 22256	55F0H to 56F0H	DevER0 to DevER256	ER (extension file register)
23	17H	DevB	B
24	18H	DevW	W
25	19H	DevQSB	Q/QnA link special relay (within the Q/QnACPU)
26	1AH	DevSTT	Retentive timer (contact)
27	1BH	DevSTC	Retentive timer (coil)
28	1CH	DevQSW	Q/QnA link special register (within the Q/QnACPU)
30	1EH	DevQV	Q/QnA edge relay (within the Q/QnACPU)

Device type		Device name specification	Device
Code specification			
Decimal	Hexadecimal		
35	23_H	DevSTN	Retentive timer (present value)
101	65_H	DevMAIL	Q/QnA SEND function (arrival acknowledgment) and RECV function
102	66_H	DevMAILNC	Q/QnA SEND function (no arrival acknowledgment)
1001 to 1255	$3E9_H$ to $4E7_H$	DevLX1 to DevLX255	Direct link input
2001 to 2255	$7D1_H$ to $8CF_H$	DevLY1 to DevLY255	Direct link output
23001 to 23255	$59D9_H$ to $5AD7_H$	DevLB1 to DevLB255	Direct link relay
24001 to 24255	$5DC1_H$ to $5EBF_H$	DevLW1 to DevLW255	Direct link register
25001 to 25255	$61A9_H$ to $62A7_H$	DevLSB1 to DevLSB255	Direct link special relay (network module side)
28001 to 28255	$6D61_H$ to $6E5F_H$	DevLSW1 to DevLSW255	Direct link special register (network module side)
29000 to 29255	7148_H to 7247_H	DevSPG0 to DevSPG255	Special direct buffer register
31000 to 31255	7918_H to $7A17_H$	DevEM0 to DevEM255	EM (shared device) ＊1
32000 to 32255	$7D00_H$ to $7DFF_H$	DevED0 to DevED255	ED (shared device) ＊1

＊1: Only the personal computers of other stations can be accessed (only when the MX Links (later than SW2D5F-CSKP-E) is running on Windows NT® Workstation 4.0 on the opposite side).

11.9 Sample Programs

When SW0DNC-MNETH-B is installed in a PC, sample programs are registered in <User-specified folder>-<Mneth>-<Samples>.
Sample programs are provided as a reference for creating user application programs. The user is solely responsible for the use of the sample programs provided.

(1) Vb folder (for Visual Basic® 5.0, 6.0)

(a) Demo folder
Contains a sample program for reading D0.

(b) Mtest folder
Contains a sample program for the general MELSEC data link library.

(2) Vc folder (for Visual C++® 5.0, 6.0, .NET 2003, 2005)

(a) Mtest folder

Filer name	Contents
Netsmp1.c	Contains a sample program for reading device D of station number 1.

(3) Net folder (for Visual Basic® .NET 2003, 2005)

(a) NetVb\2003\MTEST folder
Contains a sample program for the general MELSEC data link library using Visual Basic® .NET 2003.

(b) NetVb\2005\MTEST folder
Contains a sample program for the general MELSEC data link library using Visual Studio 2005 Visual Basic® .

12 PROGRAMMING

12.1 Cautions in Programming

This section explains concerning cautions in the case that a program is created using data on a network.

12.1.1 Interlock related signals

Show a list of the interlock signal devices used in the user program.
For other hosts and other stations, see the "Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC Network) about the operating status and setting status, etc.
Also, if more than one MELSECNET/H board is installed in the same personal computer, SB/SW is refreshed in the personal computer side devices in the range 0_H to $1FF_H$ for each MELSECNET/H board.

POINT
In the Q series, the link special relay (SB) and link special register (SW) are used by the intelligent function module as a whole. For that reason, if SB/SW are used in a program, control them correctly so that there is no overlapping use, etc.

12

Assignment of link special relays (SB) and link special registers (SW) when multiple boards are installed

Device	Name	Description	Device status	
			Off (0)	On (1)
SB20	Module status	Indicates the operation status of the network module and MELSECNET/H Board and the communication status with the CPU.	Normal	Abnormal
SB47	Baton pass status of host	Indicates the baton pass status of the host. It is in a status that the cyclic transmission and transient transmission can be performed when it is normal.	Normal (Data link enabled)	Abnormal (Host disconnected)
SB49	Data link status of host	Indicates the data link status (cyclic transmission status) of the host.	Data link being executed (Executing cyclic transmission)	Data link being stopped (Set after refresh completion)
SB70	Baton pass status of each station	Indicates the baton pass status of each station (including the host). Reserved stations and stations having numbers higher than the maximum station number are not included. This device turns off when SW70 to 73 are all "0".	All stations normal	One or more stations are abnormal
SB74	Data link status of each station	Indicates the data link (cyclic transmission) status of each station (including the host). Reserved stations and stations having numbers higher than the maximum stations number are not included. This device turns off when SW74 to 77 are all "0".	All stations executing data link (All stations executing cyclic transmission)	One or more stations are not executing data link
SW70 to 73	Baton pass status of each station (per station number)	Stores the baton pass status of each station (including the host). b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW70: 16 15 14 13 to 5 4 3 2 1 SW71: 32 31 30 29 to 21 20 19 18 17 SW72: 48 47 46 45 to 37 36 35 34 33 SW73: 64 63 62 61 to 53 52 51 50 49 Numbers 1 to 64 in the table denote station numbers.	Baton pass normal (including reserved stations during online and stations having numbers higher than the maximum station number)	Baton pass abnormal (including reserved stations during offline test and stations having numbers higher than the maximum station number)
SW74 to 77	Data link status of each station (per station number)	Stores the data link (cyclic transmission) status of each station. (Including the host) b15 b14 b13 b12 to b4 b3 b2 b1 b0 SW74: 16 15 14 13 to 5 4 3 2 1 SW75: 32 31 30 29 to 21 20 19 18 17 SW76: 48 47 46 45 to 37 36 35 34 33 SW77: 64 63 62 61 to 53 52 51 50 49 Numbers 1 to 64 in the table denote station numbers.	Executing data link (including reserved stations and stations having numbers higher than the maximum station number)	Station not executing data link

12.2 Cyclic Transmission

The link scan of the MELSECNET/H and the programmable controller of the user program operate asynchronously.
Depending on the timing of the user program execution, link data with data types of more than 32 bits (two words), such as the ones below, may be broken up into new and old data, which may coexist in 16 bit (one word) units.

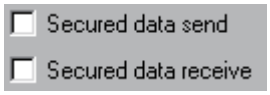
- Floating point data
- Current values of positioning module, command speed.

The MELSECNET/H provides the following functions for making handling of the link data easy.

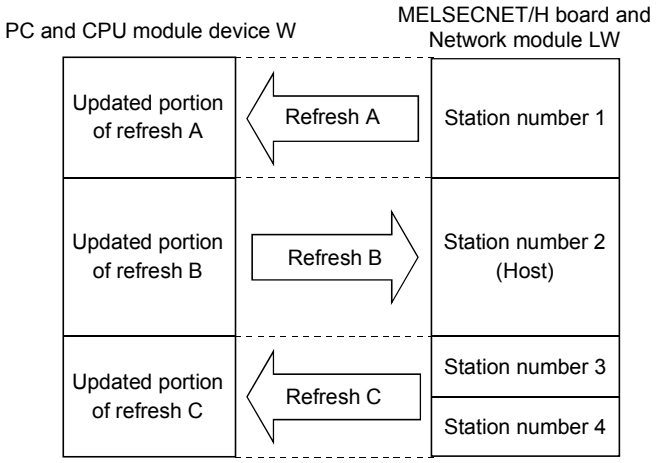
- 32 bit data guarantee (See "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)" for details.)
- Block guarantee of cyclic data per station (See Section 12.2.1 Block guarantee of cyclic data per station for details)

12.2.1 Block guarantee of cyclic data per station

By enabling the parameter settings shown below, handshaking for the cyclic data is performed between the PC and the MELSECNET/H board and then the network is refreshed.
Through the cyclic data handshaking, the link data block is guaranteed for each station (to prevent link data separation per station ＊1).
As shown below, set the send and receive parameters as needed.
The MELSECNET/H board can be set in the MNETH utility's "Common Parameter Setting (Supplementary Settings)" screen only when it is the control station. (It is not necessary to set it if the board is a normal station.)



By selecting both [Secured data send] and [Secured data receive], an interlock for the link data between the stations to be set becomes unnecessary.



POINT

The block guarantee per station applies only to the refresh processing. To use the direct access of the link devices, the programs should be interlocked.

＊1: The separation prevention refers to a prevention of link data with double word precision (32 bits), such as the current value of the positioning module, from being separated into new data and old data in one word (16 bits) units due to the cyclic transmission timing.

12.3 Link Special Relays (SB)/Registers (SW)

The data linking information is stored in the link special relays (SB)/registers (SW). They can be used by the user program, or used for investigating faulty areas and the causes of errors by monitoring them.
The following table shows which SB and SW can be used to check which information. For more details, see "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network).

(1) To know the information about the host

Item	SB	SW
CPU and personal computer status of the host	SB004A$_H$ SB004B$_H$	SW004B$_H$
The external power supply status of the host	SB0042$_H$	—
Operation status of the MELSECNET/H Board and network module	SB0020$_H$	SW0020$_H$
Setting status of the MELSECNET/H Board and network module	SB0040$_H$ to 44$_H$ SB0058$_H$ to 69$_H$	SW0040$_H$ to 46$_H$ SW0054$_H$ to 68$_H$
Running status of the MELSECNET/H Board and network module	SB0047$_H$ to 49$_H$	SW0047$_H$ to 4A$_H$

(2) To know information about the entire network

Item	SB	SW
CPU and personal computer status of each station (normal/abnormal)	SB0080$_H$ SB0088$_H$	SW0080$_H$ to 83$_H$ SW0088$_H$ to 8B$_H$
CPU and personal computer operation status of each station (RUN/STOP)	SB0084$_H$	SW0084$_H$ to 87$_H$
Cyclic transmission status of each station	SB0074$_H$	SW0074$_H$ to 77$_H$
The external power supply status of each station	SB008C$_H$	SW008C$_H$ to 8F$_H$
Link scan, communication mode	SB0068$_H$ SB0069$_H$	SW0068$_H$ to 6D$_H$
Setting information of the network	SB0054$_H$ to 69$_H$	SW0054$_H$ to 68$_H$
Running information of the network	SB0070$_H$	SW0070$_H$ to 73$_H$
Line status	SB0090$_H$ to 9A$_H$	SW0090$_H$ to 9F$_H$

(3) To know redundant CPU system information

Item	SB	SW
Operating mode of redundant CPU	SB01F4$_H$	SW01F4$_H$ to 1F7$_H$
Pairing setting of each station	SB01F8$_H$	SW01F8$_H$ to 1FB$_H$
System status in redundant CPU system	SB01FC$_H$	SW01FC$_H$ to 1FF$_H$

MEMO

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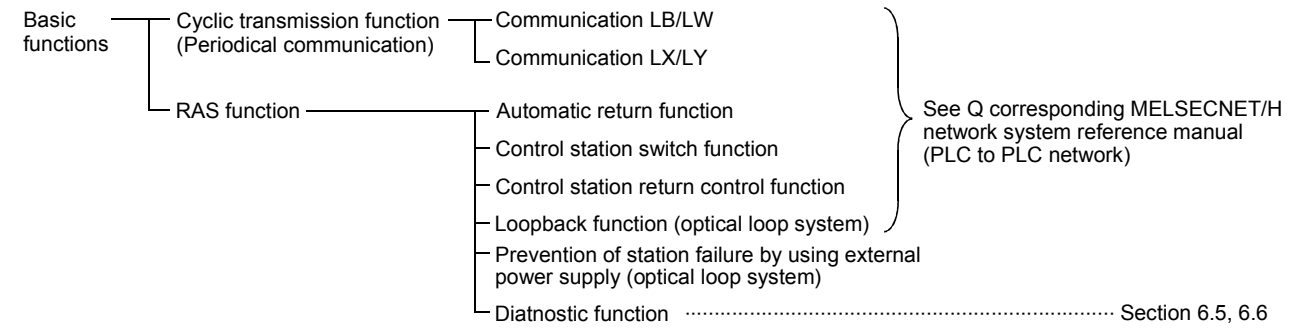
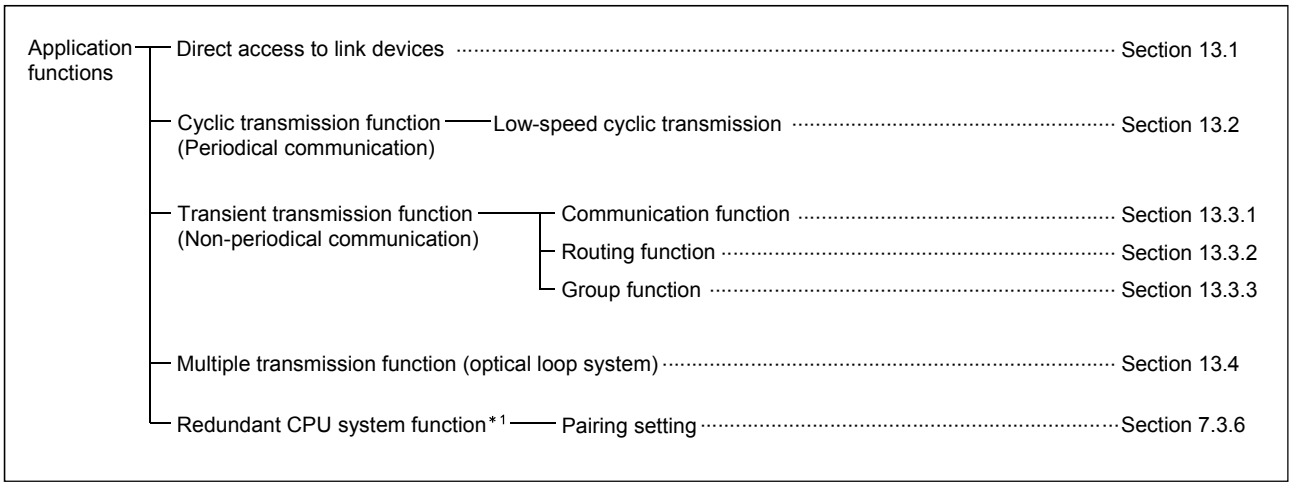
13 APPLICATION FUNCTIONS


Basic functions
Cyclic transmission function (Periodical communication)
Communication LB/LW
Communication LX/LY
RAS function
Automatic return function
Control station switch function
Control station return control function
Loopback function (optical loop system)
Prevention of station failure by using external power supply (optical loop system)
Diatnostic function
Section 6.5, 6.6
See Q corresponding MELSECNET/H network system reference manual (PLC to PLC network)



*1: For application of the redundant CPU system to the Q corresponding MELSECNET/H, refer to "Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)".

13.1 Direct Access to the Link Devices

The link devices (LB, LW, LX, LY, SB, SW) of the MELSECNET/H board network module can be directly read or written from the use program by the driver setting.
By directly accessing the link devices, the link refresh time and the transmission delay time can be shortened.
However, in direct access, since block guarantees are not applicable in station units, it is necessary to establish an interlock.
For the direct access setting, set it in the "Driver" in the MNETH utility.

POINT

The direct access of the link devices LX/LY is limited to the communication with the block I/O master station set with the common parameters. By limiting the communication, data cannot be shared among multiple stations, such as link device LB/LW, but 1:1 communication between predefined stations is allowed.

13.2 Low-Speed Cyclic Transmission Function

POINT

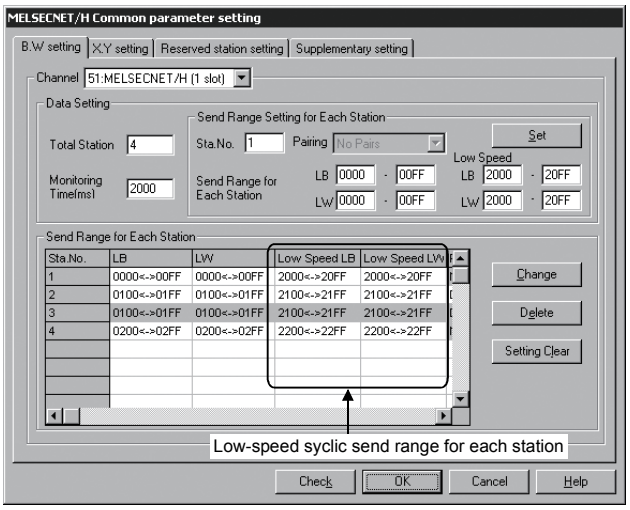
The Q00J/Q00/Q01CPU does not support the low-speed cyclic transmission function. Therefore, the low-speed cyclic transmission function cannot be used in MELSECNET/H that connects the Q00J/Q00/Q01CPU.

The low-speed cyclic transmission function is convenient when sending data that does not require high-speed transfer to other stations in a batch mode using the cyclic devices (LB/LW).

A station can transmit data only once in a single link scan. Simultaneous data transmission from multiple stations requires more scan time than the following:

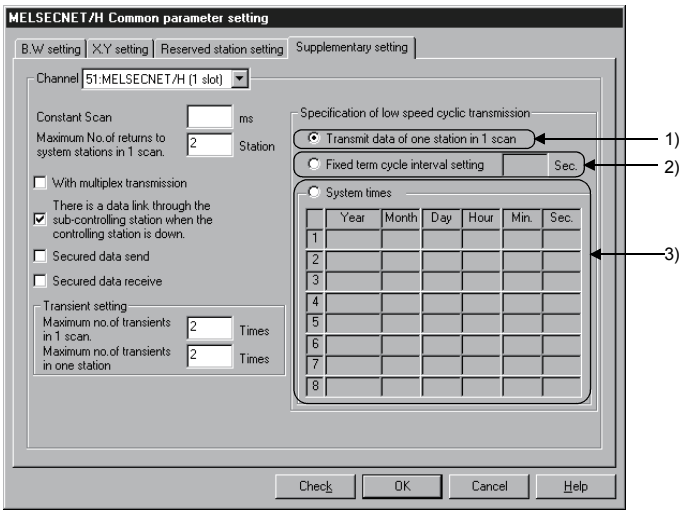
Low-speed cyclic link scan time = normal link scan time × (number of send stations + 1)

In the low-speed cyclic transmission, send range for each station is set with the "Common parameters setting (B, W setting)" screen of the MNETH utility.



The sending to other stations can be activated by three methods: 1): "Transmit data of one station in 1 scan", 2): "Fixed term cycle interval setting", and 3):" System times" and those three method are set in the "Common parameter setting" screen (bus setting).

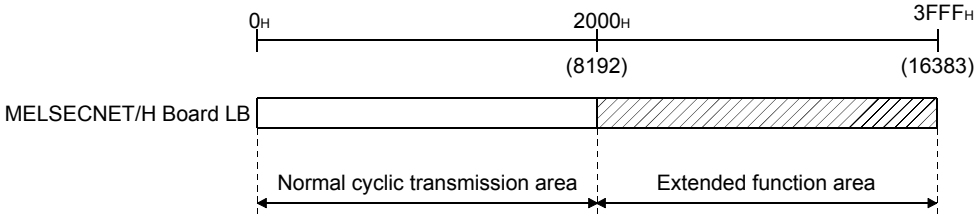
Only one of them can be selected.



13.2.1 Send range settings

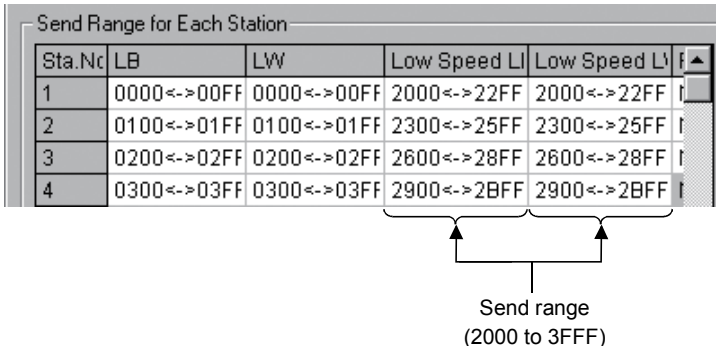
Each station's send range of link devices (low-speed LB, low-speed LW) is assigned to the extended area (2000 to 3FFF) in 16-point units for LB (start : ☐☐☐0 to end ☐☐☐F) and in one-point units for LW.
Each station's send range can also be assigned using a random station number assignment sequence.

(1) Device range



(2) Screen settings

This shows in the case where 768 points of the transmission range for each station is assigned to (Low Speed LB, Low Speed LW) in the "Common parameter setting (B, W Setting)" screen in the MNETH utility.



POINT
(1) The total of the send ranges per station must not exceed 2000 bytes in the low-speed cyclic transmission. (The send range for the normal cyclic transmission is not included.) (2) The LX and LY cannot be set as low-speed cyclic devices. (3) Low-speed syclic transmission function cannot be used during MELSECNET/10 mode.

13.2.2 Send timing

The low-speed cyclic transmission is executed separately from the normal cyclic transmission. This section describes the setting, processing interval and link cycle of the low-speed cyclic transmission.

(1) Transmission setting

The link cycle of the low-speed cyclic transmission varies depending on its transmission setting.

The setting can be made at "Specification of low speed cyclic transmission" on "Supplementary setting". (Refer to Section 13.3.1.)

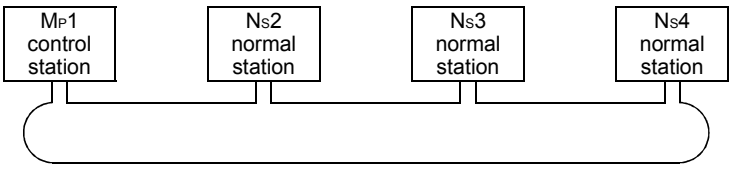
The following lists the setting options.

Setting item	Description
Transmit data of one station in 1 link scan	Low-speed cyclic data of max. one station are sent during one link scan of normal cyclic transmission.
Fixed term cycle interval setting	Low-speed cyclic data are sent at a specified time interval. ＊1
System times	Low-speed cyclic data are sent at a specified time. ＊1

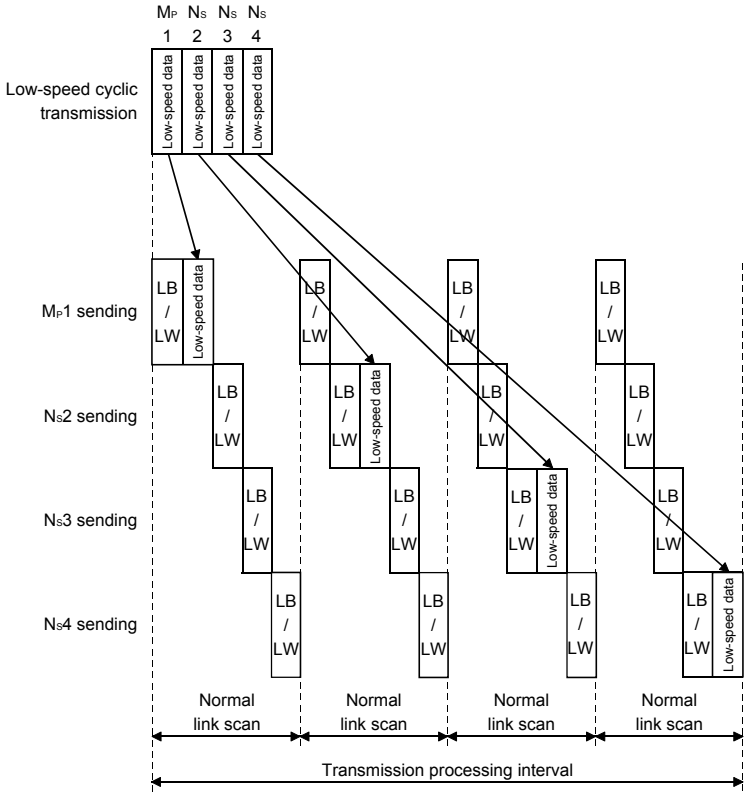
＊1: Maximum no. of stations capable of sending data during 1 link scan of normal cyclic transmission varies depending on the "Maximum no. of transients in 1 scan" setting.
Refer to Section 13.3.1 for the "Maximum no. of transients in 1 scan" setting.

(2) Transmission processing interval

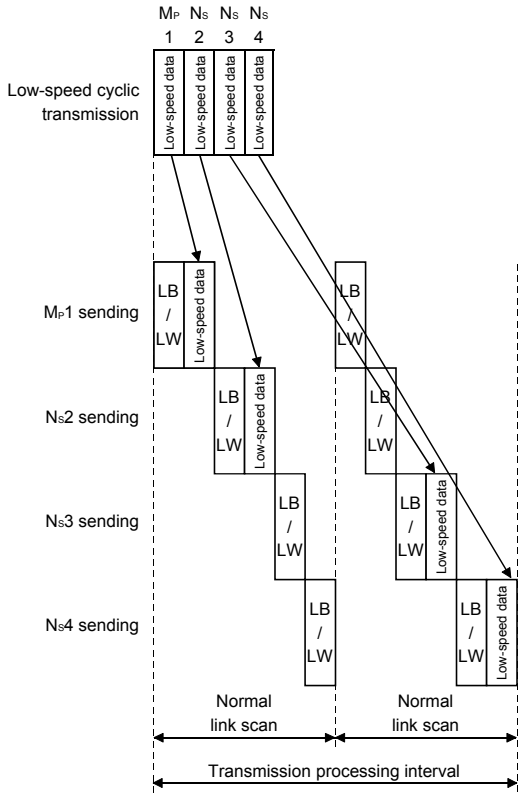
The following system configuration example is used for subsequent explanations.



(a) When "Transmit data of one station in 1 link scan", "Fixed term cycle interval setting (Maximum no. of transients: 1)" and "System times (Maximum no. of transients: 1)" are set



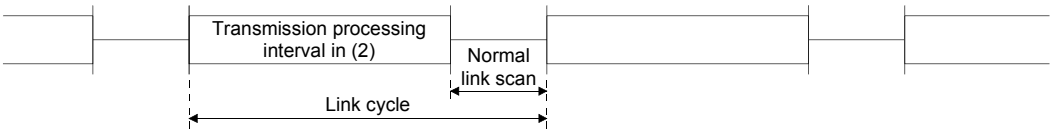
(b) When "Fixed term cycle interval (Maximum no. of transients: 2)" and "System times (Maximum no. of transients: 2)" are set



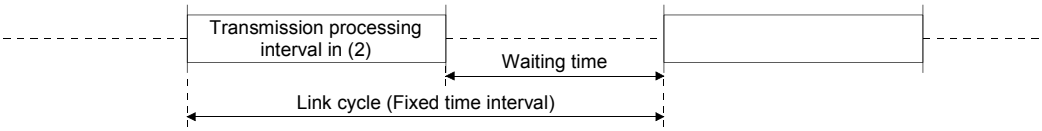
(3) Link cycle

Link cycle examples of the low-speed transmission are as shown below.

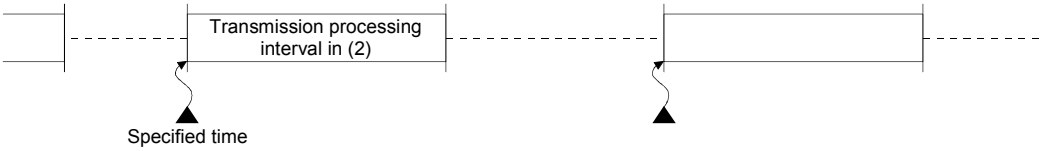
(a) When "Transmit data of one station in 1 link scan" is set



(b) When "Fixed term cycle interval setting" is set



(c) When "System times" is set



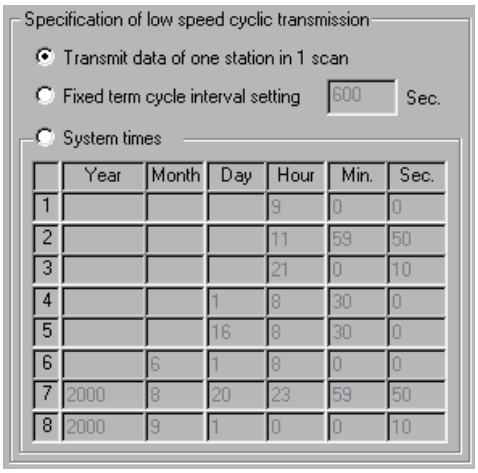
13.2.3 Startup

(1) Sending of data for one station per link scan (default)

The low-speed cyclic data for a maximum of one station is sent in one link scan of the normal cyclic transmission.

[Setting method]

1) Click (◉) "Transmit data of one station in 1 scan" to select.


Specification of low speed cyclic transmission
Transmit data of one station in 1 scan
Fixed term cycle interval setting
600
Sec.
System times
Year Month Day Hour Min. Sec.
1 9 0 0
2 11 59 50
3 21 0 10
4 1 8 30 0
5 16 8 30 0
6 6 1 8 0 0
7 2000 8 20 23 59 50
8 2000 9 1 0 0 10

POINT

The fastest link scan time in the low-speed cyclic transmission can be calculated by the following equation:

LS_L = LS × number of stations + LS
= LS × (number of stations + 1)

LS_L : The fastest link scan time in the low-speed cyclic transmission

LS : Normal link scan time

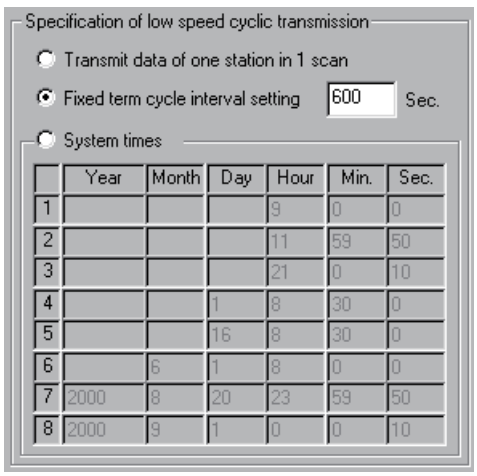
(2) Fixed term cycle interval setting

The low-speed cyclic data is sent in the link cycle of the designated time frequency.

Valid setting frequency: 1 to 65535 s (18 h, 12 min and 15 s)

[Setting method]

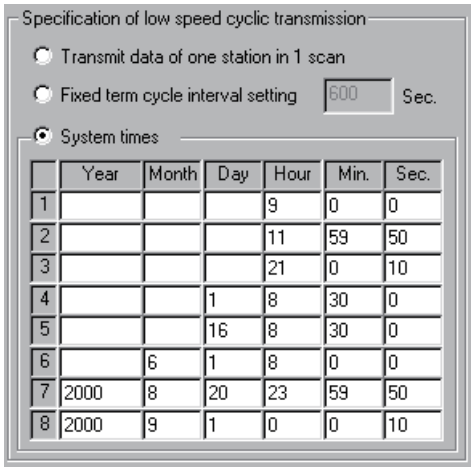
1) Click (◉)"Fixed term cycle interval setting" to select.
2) Set the time in seconds (the screen shows a value of 600).


Specification of low speed cyclic transmission
Transmit data of one station in 1 scan
Fixed term cycle interval setting
600
Sec.
System times
Year Month Day Hour Min. Sec.
1 9 0 0
2 11 59 50
3 21 0 10
4 1 8 30 0
5 16 8 30 0
6 6 1 8 0 0
7 2000 8 20 23 59 50
8 2000 9 1 0 0 10

(3) System timer interval

The low-speed cyclic data are sent in the link cycle at the designated time.
By omitting year, month, and day in the setting, the low-speed cycle transmission can be activated yearly (or monthly, or daily). Hour, minute and second values must be entered.
Setting points: 1 to 8 points
[Setting method]

1) Click (◉)"System times" to select.
2) Set year, month, day, hour, minute and second to the designated time.
   In the following screen example:
   Points 1 to 3 : By omitting year, month and day, data is sent every day at the designated time.
   Points 4 and 5 : By omitting year and month, data is sent at the designated time monthly.
   Point 6 : By omitting the year, data is sent at the designated time every year.
   Points 7 and 8 : Data is sent only once at the designated time.



	Year	Month	Day	Hour	Min.	Sec.
1				9	0	0
2				11	59	50
3				21	0	10
4			1	8	30	0
5			16	8	30	0
6		6	1	8	0	0
7	2000	8	20	23	59	50
8	2000	9	1	0	0	10

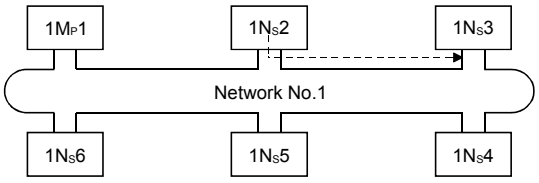
POINT

(1) The system timer operates based on the host's clock.
If used without matching the clocks on the sending station and receiving station, there may be a time gap between the stations.
(2) When handling multiple data without the block guarantee per station function, new and old data may coexist.
Apply interlocks to prevent the coexistense.

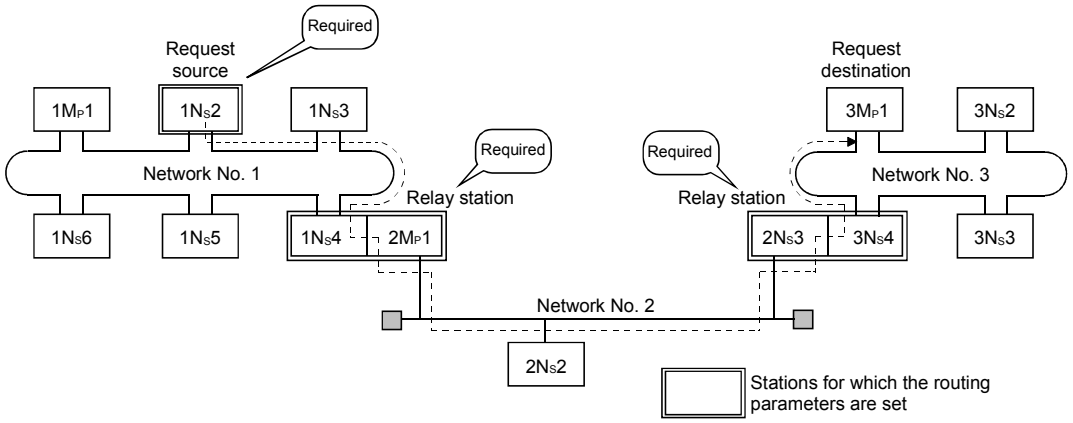
13.3 Transient Transmission Function

The transient transmission function performs data communication only when it is requested between stations.
In the MELSECNET/H, data communication can be performed with other stations having the same network number (the same network as where the host is connected), as well as with stations having other network numbers.

1) Transient transmission function to a station on the same network



2) Transient transmission to stations on other networks (routing function)
In this case, the routing parameters must be set for the request source and relay stations.



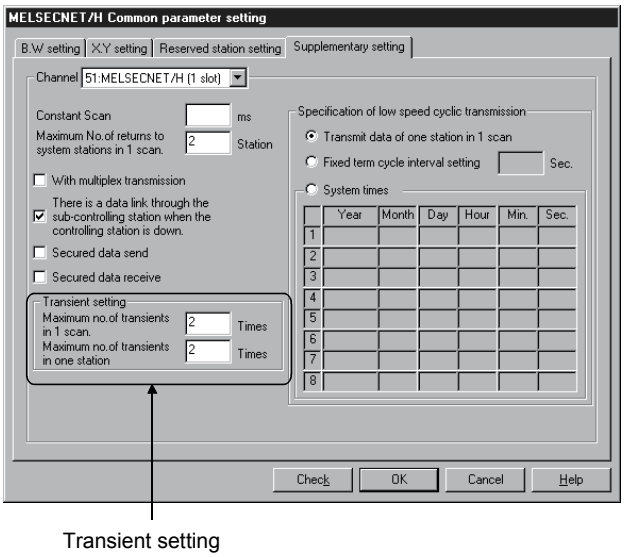
13.3.1 Communication function

(1) Parameter settings

Set the execution conditions for the transient transmission with the parameters listed below.

In the default settings, both the number of transients that one network can execute in one link scan ("Maximum no. of transients in 1 scan") and the number of transients that one station can execute in one link scan ("Maximum no. of transients in one station") are set to 2 times. Change the number of transients that can be executed in a link scan as necessary (see Points below).

Setting item \ Setting value	Valid setting times	Default setting
Maximum no. of transients in 1 scan	1 to 255 times	Twice
Maximum no. of transients in one station	1 to 10 times	Twice

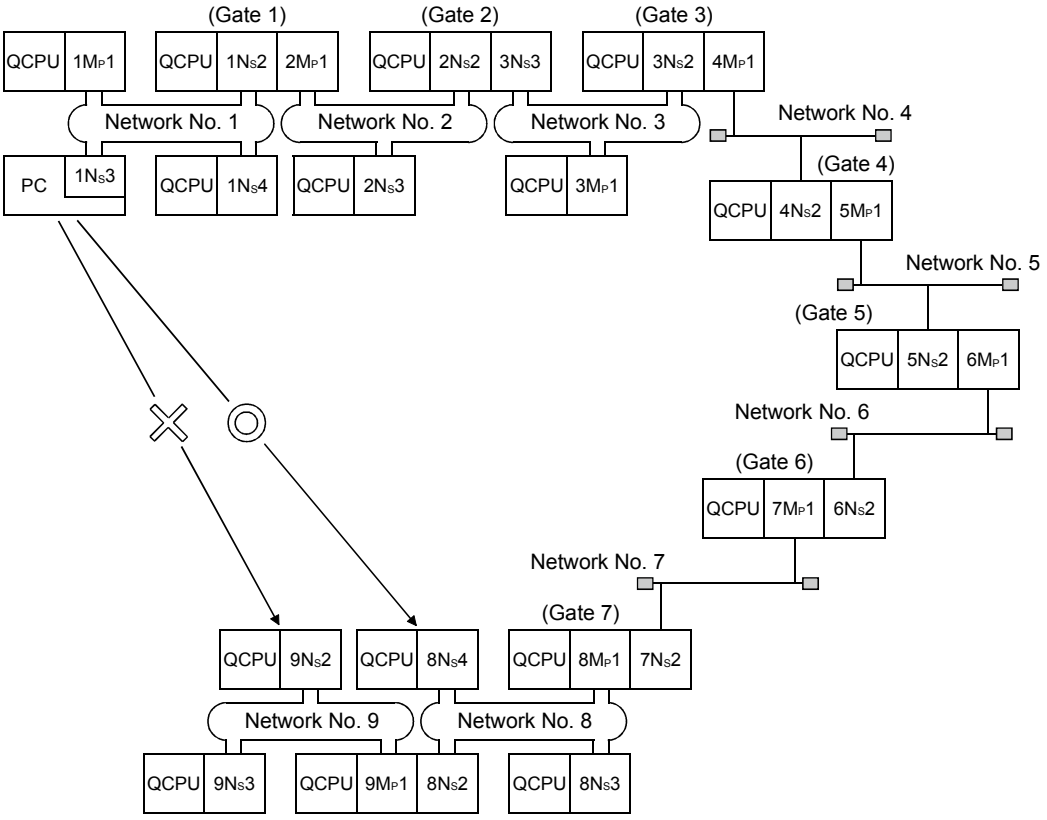


POINT
(1) By increasing the number of transients, multiple transient instructions can be executed at the same time (in one link scan). (2) If the number of transients is increased and the transient request was issued in each station at the same time, the link scan time becomes temporarily longer and the cyclic transmission is also affected. Do no set unnecessarily large values. (3) When the transient transmission and the low-speed cyclic transmission are used at the same time, these transient setting parameters limit the total number of transient and low-speed cyclic transmissions.

(2) Transient transmission range

In a multiple network system of the MELSECNET/H, communication can be performed with stations in a maximum of eight networks by setting the routing parameters described in Section 13.3.2.

The following diagram illustrates the transient transmission range using an example where the destinations are limited to eight networks.

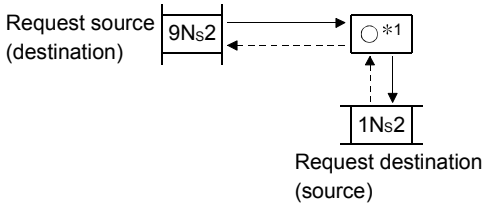


[Transient transmission valid range]

The following table shows the valid ranges of send/receive by transient transmission using the network configuration on the previous page.

In the table below, ◎, ○, and × indicate whether or not the transient transmission between the request source (destination) listed in the column at the left and the request destination (source) listed in the row at the bottom is possible.

For example, the valid range between 9NS2 of network number 9 and 1NS2 of network number 1 is indicated by ○ *1 (communication is possible by designating a network module that is close to the request source of the same programmable controller).



◎: Possible

○: Possible by setting the routing parameter

×: Not possible

*1: Communication is possible by designating a network module that is close to the request source of the same programmable controller

Network No. 1	1MP1	Host																						
	1NS2	◎	Host																					
	1NS3	◎	◎	Host																				
	1NS4	◎	◎	◎	Host																			
Network No. 2	2MP1	◎	Host	◎	◎	Host																		
	2NS2	○	◎*1	○	○	◎	Host																	
	2NS3	○	◎*1	○	○	◎	◎	Host																
Network No. 3	3MP1	○	○	○	○	○	◎*1	○	Host															
	3NS2	○	○	○	○	○	◎*1	○	◎	Host														
	3NS3	○	○	○	○	◎	Host	◎	◎	◎	Host													
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮													
Network No. 8	8MP1	○	○	○	○	○	○	○	○	○	○	·····	Host											
	8NS2	○	○	○	○	○	○	○	○	○	○	·····	◎	Host										
	8NS3	○	○	○	○	○	○	○	○	○	○	·····	◎	◎	Host									
	8NS4	○	○	○	○	○	○	○	○	○	○	·····	◎	◎	◎	Host								
Network No. 9	9MP1	○	○	○	○	○	○	○	○	○	○	·····	◎	Host	◎	◎	Host							
	9NS2	×	○*1	×	×	○	○	○	○	○	○	·····	○	◎*1	○	○	◎	Host						
	9NS3	×	○*1	×	×	○	○	○	○	○	○	·····	○	◎*1	○	○	◎	◎	Host					
Request source (destination) / Request destination (source)		1MP1	1NS2	1NS3	1NS4	2MP1	2NS2	2NS3	3MP1	3NS2	3NS3	·····	8MP1	8NS2	8NS3	8NS4	9MP1	9NS2	9NS3						
		Network No. 1				Network No. 2			Network No. 3			·····	Network No. 8				Network No. 9								

13.3.2 Routing function

The routing function is used to execute transient transmissions to stations having other network numbers in a multiple network system.
In order to execute the routing function, it is necessary to set the "routing parameters" to associate the network numbers of the request source and the station that will function as a bridge*1 between the networks.

*1: The bridge function refers to sending data via an adjacent network.

POINT
MELSECNET/H board cannot be used as a relay station that function as a bridge. Use the network module for the relay station.

(1) Stations that require routing parameter setting

(a) The setting is required for both the transient transmission request source and relay stations.

(b) For the relay stations, two routing settings are required: one from the request source to the request destination, and the other from the request destination back to the request source.

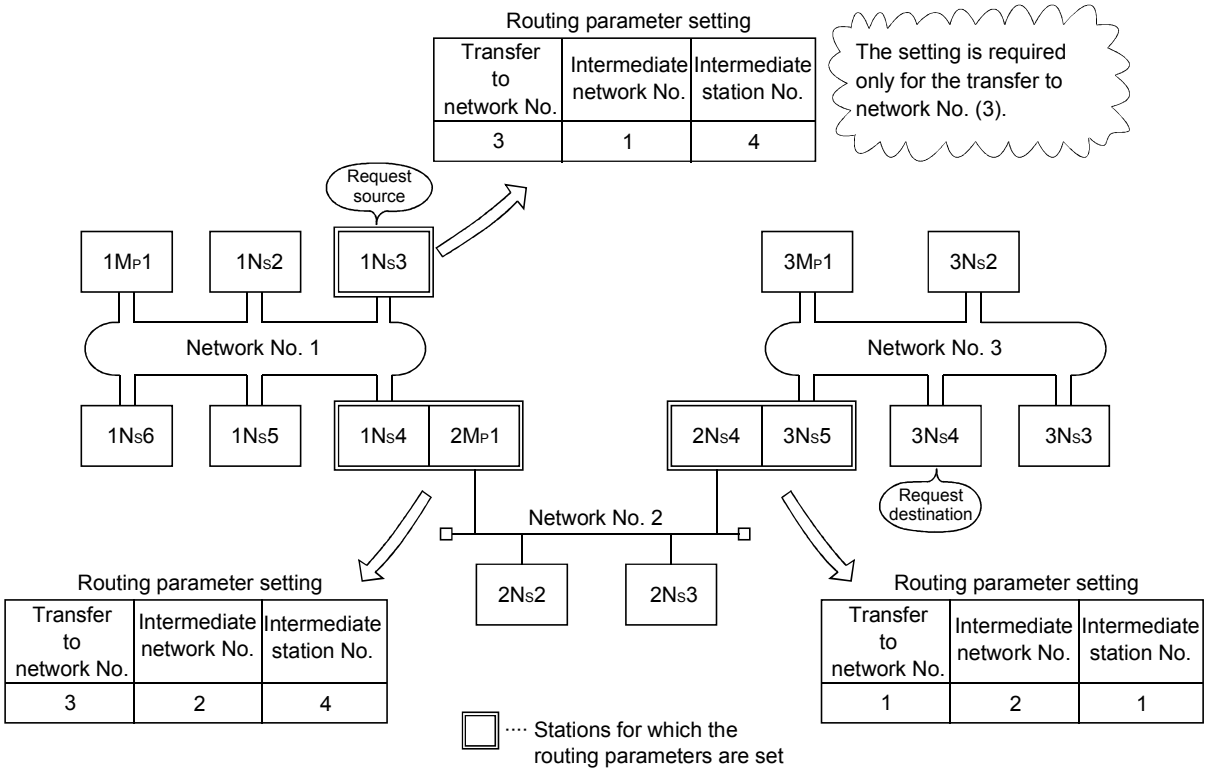
(c) The setting is not required for the request destination.

In the example shown in the diagram below where the transient transmission is executed from 1Ns3 to 3Ns4, the setting is required for the following three stations:

1) Setting for 1Ns3 that requests the transient transmission
Designate the network number (3) of the Transfer to, the relay station (1Ns4), and the relay network number (1) to the relay station.

2) Setting for 1Ns4 that functions as a bridge
Designate the network number (3) of the Transfer to, the relay station (2Ns4), and the relay network number (2) to the relay station. It is not necessary to set the return route because it is designated in the setting for 2Ns4.

3) Setting for 2NS4 that function as a bridge
It is not necessary to set the routing to the Transfer to because the host is on the same network as the destination transfer (3). However, it is necessary to set the Transfer from network number (1) as the Transfer to network number and to designate the relay station (2MP1) and the relay network number (2) to the relay station in order to trace a route back to the request source.



∗1: The bridge function refers to sending data via an adjacent network.

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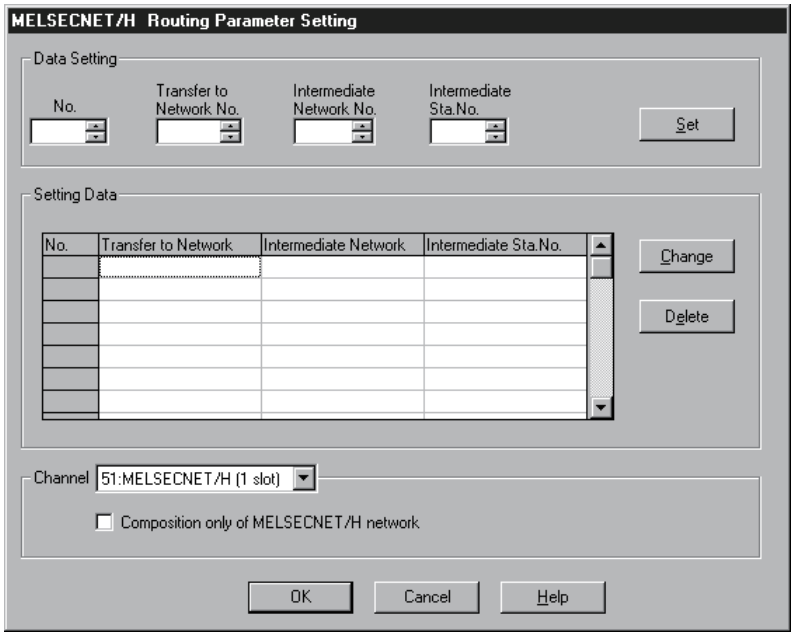
(2) Routing parameter settings

(a) Setting screen

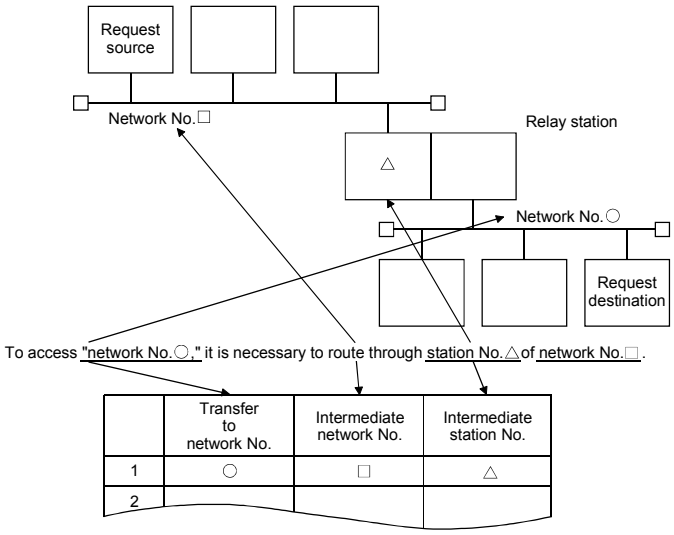
A maximum of 64 "Transfer to Network No." can be set on the "Routing Parameter Setting" of the MNETH utility.
Note that the same Transfer to network number cannot be designated more than once (multiple). Therefore, the host can become the request source or can be accessed to other station through the host with 64 types of different "Transfer to Network No."

Setting item	Valid setting range
Transfer to Network No.	1 to 239
Intermediate Network No.	1 to 239
Intermediate Station No.	1 to 64



(b) Setting method

Set the routing parameters according to the procedure described below.

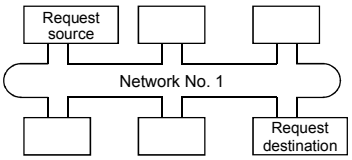


(3) Settings for different network system configurations and setting contents

The stations to set for the transient transmission and the contents of the routing parameters vary depending on the system configuration.

(a) Single network system

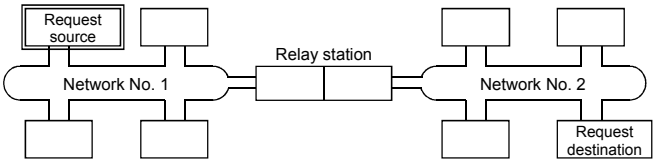
It is not necessary to set the routing parameters for the transient transmission to the same network.



(b) Multiple network system: two networks

Set the routing parameters only for the request source station.

The route for reaching the request destination (network number 2) must be set for the request source station.



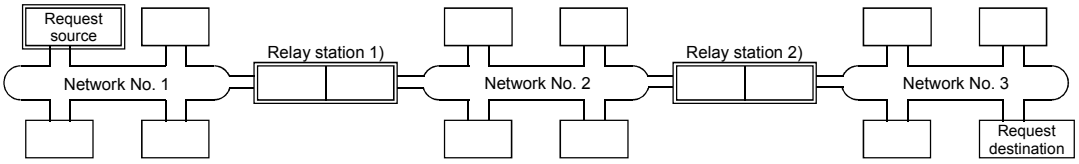
(c) Multiple network system: three networks

Set the routing parameters for the request source and the relay stations.

The route for reaching the request destination (network number 3) must be set for the request source.

The route for reaching the request destination (network number 3) must be set for relay station 1).

The route for reaching the request source (network number 1) must be set for relay station 2).



(d) Multiple network system: four networks

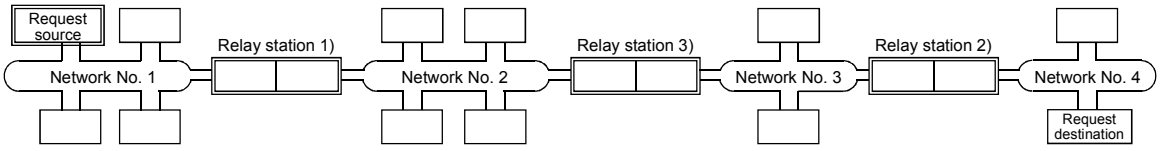
Set the routing parameters for the request source station and the relay stations.

The route for reaching the request destination (network number 4) must be set for the request source station.

The route for reaching the request destination (network number 4) must be set for relay station 1) (the relay station that is closest to the request source).

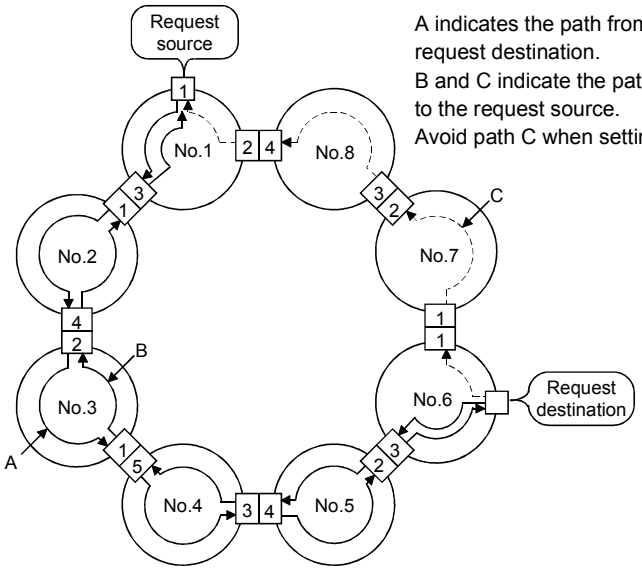
The route for reaching the request source (network number 1) must be set for relay station 2) (the relay station that is closest to the request destination).

The routes for reaching the request destination (network 4) and the request source (network number 1) must be set for relay station 3) (relay station other than 1) and 2)).



POINT

(1) When a network is connected in a loop as shown in the figure below, make sure to set the routing parameters so that the same relay station is routed for both the "route from request source to request designation" and the "route back from request destination to request source."
Do not set the destination and returning paths to circle the entire loop. The first relay station in the return path from the request destination is determined by the relay station in the forward path; thus, data cannot be transferred to a station beyond that relay station and an error occurs.



(2) When data is sent to a remote network by transient transmission using the routing parameters, data is transferred through many networks; thus, the amount of transmission data and the number of transmissions may affect the entire system.
For example, in network No. 2 to 5 in the figure above, the link scan time may become temporarily longer and there may be delays in the transient transmission of the host because of the transient transmissions from other networks.
When using the routing parameters, design the transient transmission by considering the entire system.

(3) When multiple network systems are connected with the routing function, the request source can send requests to destinations in up to eight network systems (the maximum number of relay stations is seven stations).

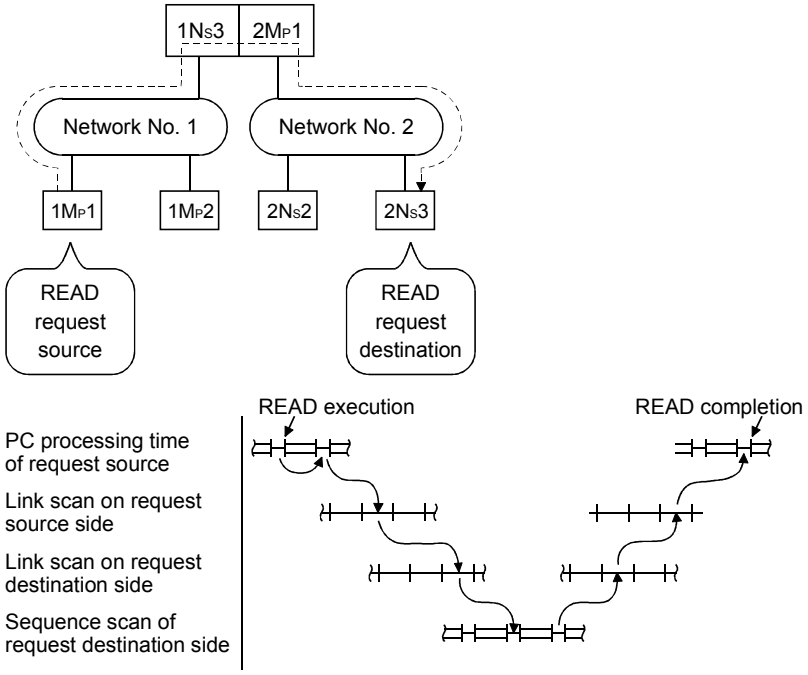
(4) Calculation of transmission delay time

The processing time of the transient transmission instruction to access a station on other network in a multiple network system can be obtained by adding the following transmission delay factors.

(Routing transmission delay time) = (processing time from request source to relay station)
+ (processing time from relay station to request destination)

(a) Processing time from request source to relay station
This is the transmission delay time from the request source (the station that executed the instruction) to the relay station that performs the routing. In the following example, it is the time required for the data to be transmitted from station 1MP1 to station 1NS3.
See "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network) for the calculation of translation of delay time.

(b) Processing time from relay station to request destination
This is the transmission delay time from the relay station to the request destination (the station accessed with the instruction). In the following example, it is the time required for the data to be transmitted from station 2MP1 to station 2NS3.
See "Q corresponding MELSECNET/H network system reference manual (PLC to PLC network) for the calculation of translation of delay time.

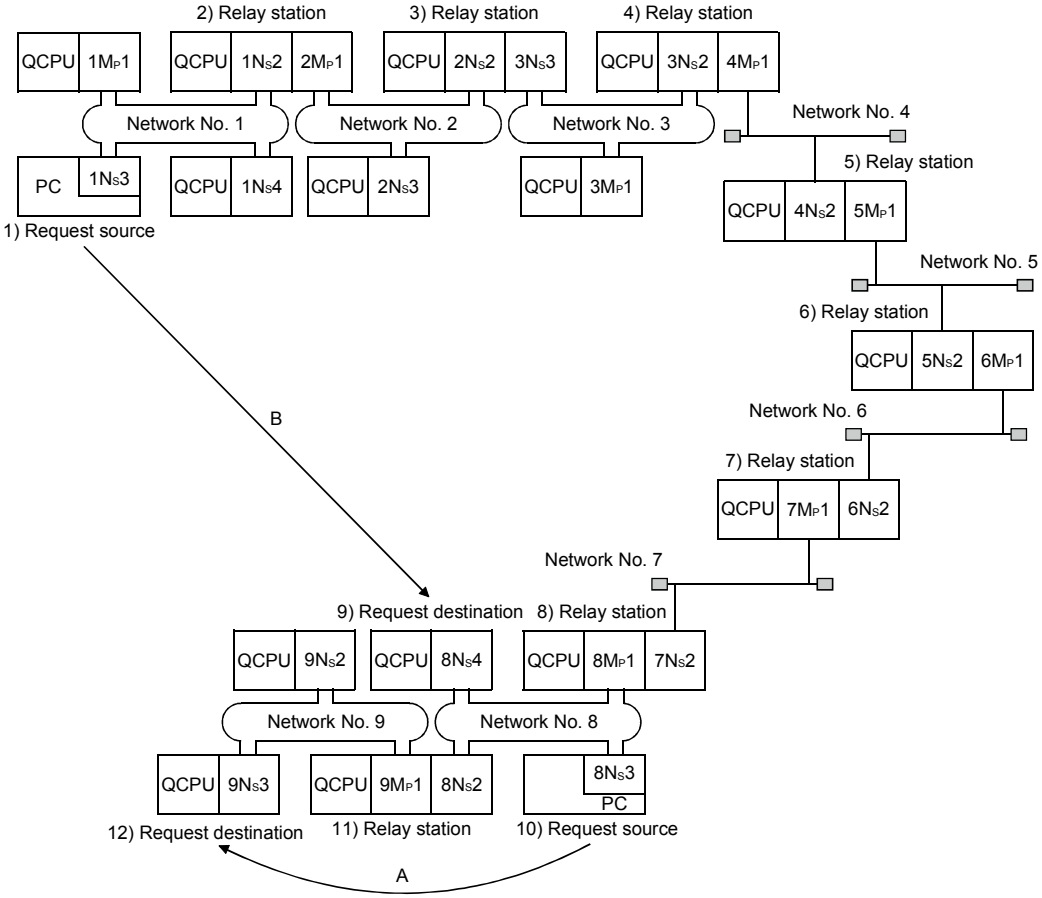


REMARK

When three or more networks are relayed through by means of routing, add the processing time from one relay station to the other relay station to the routing transmission delay time.

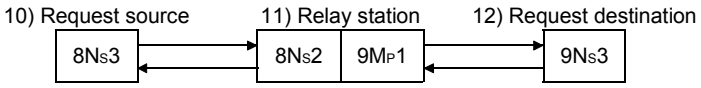
(5) Setting example

The routing parameter setting examples (A and B) are explained using the system configuration explained in Section 13.3.2.



(a) Setting example A

The routing parameter must be set for request source 10).



	No.	Transfer to network No.	Intermediate network No.	Intermediate station No.
10) Request source	1	[9]	[8]	[2]

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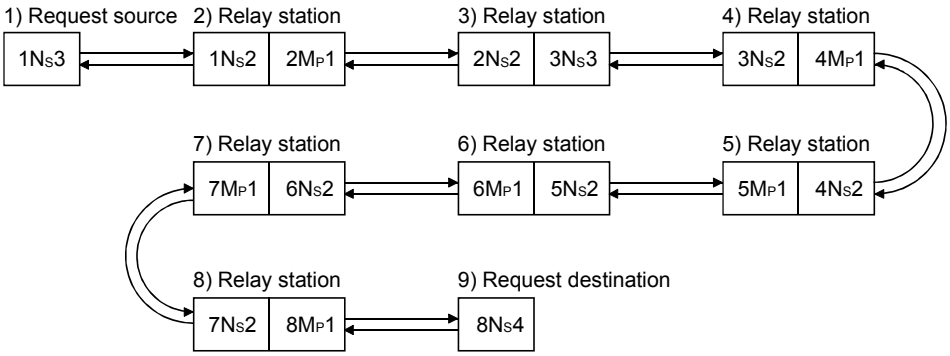
(b) Setting example B

The routing parameters must be set for the request source1), relay station 2), relay station 3), relay station 4), relay station 5), relay station 6), relay station 7), and relay station 8).

In addition, there are two types of routing parameter settings; one is used when sending data from the request source to the request destination (when sending a request), and the other is used when returning from the request destination to the request source (when sending a response).

Either one of them or both must be set for each station.



1) Request source

No.	Transfer to network No.	Intermediate network No.	Intermediate station No.	
1	[8]	[1]	[2]	Used when sending a request

2) Relay station

1	[8]	[2]	[2]	Used when sending a request

3) Relay station

1	[8]	[3]	[2]	Used when sending a request
2	[1]	[2]	[1]	Used when sending a response

4) Relay station

1	[8]	[4]	[2]	Used when sending a request
2	[1]	[3]	[3]	Used when sending a response

5) Relay station

1	[8]	[5]	[2]	Used when sending a request
2	[1]	[4]	[1]	Used when sending a response

6) Relay station

1	[8]	[6]	[2]	Used when sending a request
2	[1]	[5]	[1]	Used when sending a response

7) Relay station

1	[8]	[7]	[2]	Used when sending a request
2	[1]	[6]	[1]	Used when sending a response

8) Relay station

1	[1]	[7]	[1]	Used when sending a response

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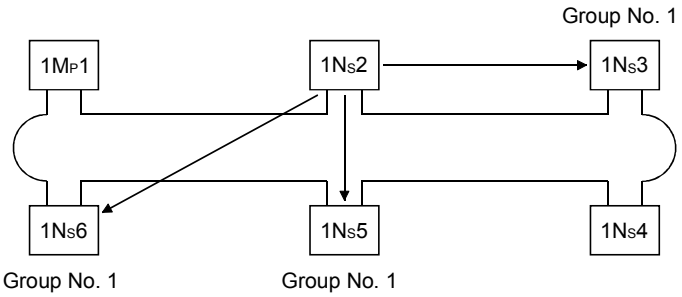
13.3.3 Group function

The group function is used to group the target stations of a transient transmission and send data to all of the stations in a group with a single instruction. One network may have a maximum of 32 groups.
By setting a group designation to the target station number in the control data of a dedicated instruction, stations with the matching group number retrieve the transient data.
Note that whether or not the transient transmission is normally completed cannot be verified because the data are transmitted to multiple stations.

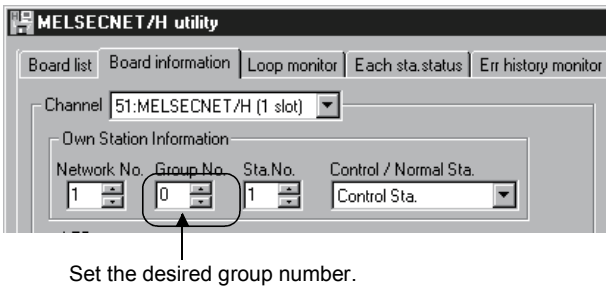
(1) Visual representation of the function

The following figure shows an example of grouping. When a transient transmission is executed by designating group No. 1, all of the three stations, 1NS3, 1NS5 and 1NS6, retrieve the transient data.



(2) Setting method

Set the group number of the MELSECNET/H board using the "Board information" screen of the MNETH utility.
Setting range : 1 to 32 (Default : 0 (no group designation))



(3) Transient transmission instructions that allows group designation

Use mdsend to execute the transient transmission instruction in the user program.

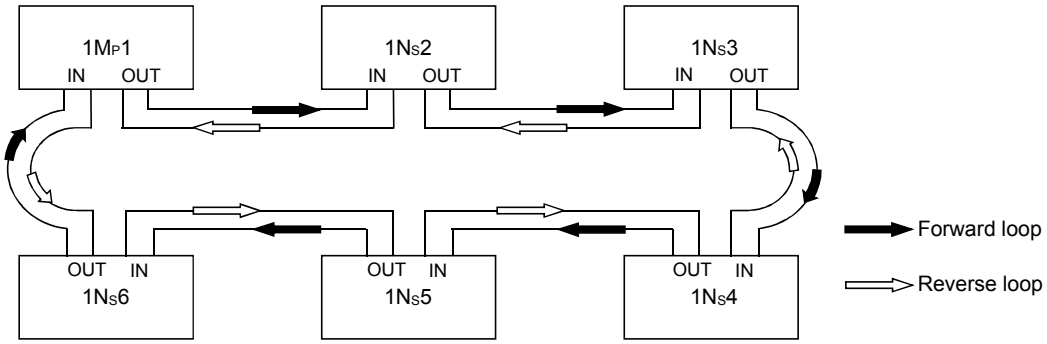
⚠CAUTION

[Precautions when executing the transient transmission by a group function]
When a group is designated, the execution of the transient transmission cannot be verified.
When this mode of transient transmission is executed successively, a "no reception buffer space error" (error code: F222) may occur. Design the system thoroughly to allow for a sufficient interval between executions, and make sure to test (debug) to confirm that successive executions can be performed without generating any error.

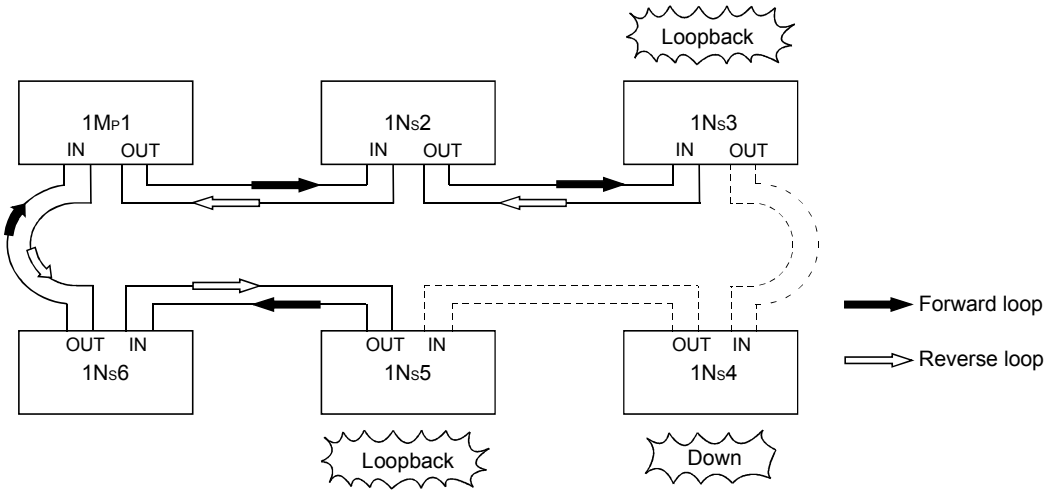
13.4 Multiplex Transmission Function (Optical Loop System)

The multiplex transmission function allows high-speed communications using duplex transmission paths (both the forward and reverse loops) in the optical loop system. In order to execute the multiplex transmission function, setting for the "Supplementary settings" of the common parameters is required. Note that this setting is not allowed unless the total number of link stations is four stations or more.

(1) Using the multiplex transmission function, the high-speed communication is performed using both the forward and reverse loops effectively.



(2) If an error occurs in the transmission path while the multiplex transmission function is used, data linking continues by communicating only using the transmission path on one side of either the forward or reverse loop, or by switching to the communication using loopback. The transmission speed in this case is 10 Mbps or 25 Mbps.



REMARK

The multiplex transmission function is effective only in reducing the link scan time when the number of connected stations is 16 or more and the link devices assigned with common parameters is 2,048 bytes or more. The link scan time will be 1.1 to 1.3 times faster compared to when the multiplex transmission function is not used.

14 ERROR CODE

An error code is returned as the return value when a function is executed.
The error definition and corrective action that correspond to each error code are described.

Return value (HEX)	Error definition	Corrective action
0	Normal completion	—
1	Driver not started The driver has not been started. The interrupt number/I/O address are overlapping with other board.	Correct the error occurred during driver startup. Check the other board setting.
2	Board response error Time out has occurred while waiting for a response to the corrective action.	Check the operation status of the access station(s) and loading condition of the board(s). Retry in a user program.
68 (44H)	PATH error A path other than the opened line was set.	Specify the number with an open path.
69 (45H)	Processing code error An unsupported processing code was issued.	Use the supported processing code.
70 (46H)	Station specification error The specified station is incorrect. A process that should have been requested to other station was requested to the host. Or, the station number corresponds to the host (0xFF) but the network number is not 0.	Correct the specification of the station number in the user program.
71 (47H)	No reception data error (during RECV request) Data has not been received.	Wait until data is received.
77 (4DH)	Memory error Enough memory could not be secured.	Terminate other application(s) currently running. Check if the system is operating nornally. Reboot the system. Increase the minimum working set area of the PC. ＊1
78 (4EH)	Time out error during mode setting Mode setting was attempted but failed due to time out.	Restart after checking that the dual-port memory is not overlapping with other board. MELSECNET/H board fault.
79 (4FH)	S/W setting data error Incorrect data was found in the argument parameter when setting S/W.	Check the argument parameter of S/W setting data.
81 (51H)	Channel response error at source (When a SEND request is issued) Received an abnormal response to the SEND request.	Retry. Check if the system is operating normally. Reboot the system.
85 (55H)	Network channel number error (When a RECV request is issued.) channel number error	Check the specified channel number when a RECV request is issued.
100 (64H)	Accessing host board An access request was issued to the host board while the host board is being accessed.	Retry.
101 (65H)	Routing parameter error The routing parameter is not set.	Correct the routing parameter.
129 (81H)	Device type error The specified device type is invalid.	Check the device type.
130 (82H)	Device number error The specified device number is out of range. When specifying the bit device, the device number is not a multiple of 8 in ACPU and not a multiple of 16 in QnACPU.	Check the device number.
131 (83H)	Device points error The specified number of points is out of device range. When specifying the bit device, the device number is not a multiple of 8 in ACPU and not a multiple of 16 in QnACPU.	Check the size.
133 (85H)	Link parameter error The link parameter is corrupt. The total number of slave station of the link parameter is 0. Fixed pattern of the link parameter is corrupt. Sum check of the link parameter is corrupt	Reset the link parameter.
136 (88H)	Random write specification error. The specified value for random write is other than 0 to 2.	Specify the value to 0 to 2 again.
215 (D7H)	Reception data length error The length of reception data or byte length is out of range.	Retry. Check the cable.
	Request data buffer length over The length of request data is out of the request data area.	Reduce the request data size.

Return value (HEX)	Error definition	Corrective action
224 ($E0_H$)	Programmable controller number request error The destination station does not exist.	Correct the station number.
225 ($E1_H$)	Processing mode error A processing code that cannot be processed by the request destination ACPU was set. (It is checked by the request destination ACPU.)	Check the request destination ACPU and processing code.
227 ($E3_H$)	Other data error Incorrect data was found in the address, head step or shift value of the request data.	Correct the request data.
1280 (500_H)	Host board memory access error	Replace the MELSECNET/H board.
1281 (501_H)	Unable to access I/O port	
4110 ($100E_H$)	DLL non-load error	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8204 ($200C_H$)	Request cancel	
8205 ($200D_H$)	Drive name error	
8206 ($200E_H$)	First step error	
8207 ($200F_H$)	Parameter type error	
8208 (2010_H)	File name error	
8209 (2011_H)	Registering/release/set status error	
8210 (2012_H)	Detailed condition division error	
8211 (2013_H)	Step condition error	
8212 (2014_H)	Bit device condition error	
8213 (2015_H)	Parameter setting error	
8215 (2017_H)	Keyword error	
8216 (2018_H)	Read/write flag error	
8217 (2019_H)	Refresh method error	
8218 ($201A_H$)	Buffer access method error	
8219 ($201B_H$)	Start mode/stop mode error	
8220 ($201C_H$)	Written clock data error	
8221 ($201D_H$)	Online data write error	
8223 ($201F_H$)	Trace time error	
8224 (2020_H)	First I/O number error	
8225 (2021_H)	First address error	
8226 (2022_H)	Pattern error	
8227 (2023_H)	SFC block number error	
8228 (2024_H)	SFC step number error	
8229 (2025_H)	Step number error	

Return value (HEX)	Error definition	Corrective action
8230 (2026_H)	Data error	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8231 (2027_H)	System data error	
8232 (2028_H)	TC set value number error	
8233 (2029_H)	Clear mode error	
8234 ($202A_H$)	Signal flow error	
8235 ($202B_H$)	Version administration error	
8236 ($202C_H$)	Module has been registered	
8237 ($202D_H$)	PI type error	
8238 ($202E_H$)	PI No error	
8239 ($202F_H$)	PI number error	
8240 (2030_H)	Shift error	
8241 (2031_H)	File type error	
8242 (2032_H)	Specified module error	
8243 (2033_H)	Error check flag error	
8244 (2034_H)	Step RUN-operation error	
8245 (2035_H)	Step RUN data error	
8246 (2036_H)	Step RUN-time error	
8247 (2037_H)	Program RUN inside writing error to E^2ROM	
8248 (2038_H)	Clock data read/write error	
8249 (2039_H)	Trace non-completion	
8250 ($203A_H$)	Registration clearness flag error	
8251 ($203B_H$)	Operation error	
8252 ($203C_H$)	The number of station error	
8253 ($203D_H$)	The number of repeat error	
8254 ($203E_H$)	The acquisition data selection error	
8255 ($203F_H$)	The number of SFC cycle error	
8258 (2042_H)	The scheduled time setting error	
8259 (2043_H)	Function count error	
8260 (2044_H)	System information error	
8262 (2046_H)	Function number error	
8263 (2047_H)	RAM operation error	

Return value (HEX)	Error definition	Corrective action
8264 (2048_H)	Boot former ROM forwarding failure	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
8265 (2049_H)	Boot former transfer mode specification error	
8266 ($204A_H$)	Not enough memory	
8267 ($204B_H$)	Backup drive (former boot drive) ROM error	
8268 ($204C_H$)	Block size error	
8269 ($204D_H$)	RUN-time detaching error	
8270 ($204E_H$)	Module has already registered	
8271 ($204F_H$)	Password registration data full error	
8272 (2050_H)	Password unregistration error	
8273 (2051_H)	Remote password error	
8274 (2052_H)	IP address error	
8275 (2053_H)	Error (argument when requesting) outside time-out value range	
8276 (2054_H)	Instruction cast undetection	
8277 (2055_H)	Trace execution type error	
8278 (2056_H)	Version error	
16384 to 20479 (4000_H to $4FFF_H$)	Errors detected by the access target CPU	Refer to the user's manual of the access target CPU module.
16386 (4002_H)	A request that cannot be processed was received.	Change the request destination.
16432 (4030_H)	The specified device type does not exist.	Check the specified device type.
16433 (4031_H)	The specified device number is out of range.	Check the specified device number.
16448 (4040_H)	The module does not exist.	Do not issue a request that generated an error to the specified special function module.
16449 (4041_H)	The number of device points is out of range.	Check the head address and number of access points and access within the existing range.
16450 (4042_H)	Corresponding module error	Check if the specified module is operating normally.
16451 (4043_H)	The module does not exist at the specified location.	Check the head I/O number of the specified module.
28672 to 32767 (7000_H to $7FFF_H$)	Errors detected by intelligent function modules such as the serial communication module	Refer to the user's manual of the access target intelligent function module.
–1 ($FFFF_H$)	Path error The specified path is invalid.	Check the path pointer that was returned by the mdOpen function.
–2 ($FFFE_H$)	Device number error The specified device number is out of range.	Check the head device number for the specified device.
–3 ($FFFD_H$)	Device type error The specified device type is invalid.	Check if the device type used is in the device list.
–4 ($FFFC_H$)	CPU error An invalid station was specified.	Check the status of the communication station. Check the specified station number.
–5 ($FFFB_H$)	Size error The device number and size are over the device range. Access was attempted using an odd device. The device number and size are over the range for the same block.	Check the specified device size. Check the device number and size.
–6 ($FFFA_H$)	Number of block error The number of blocks specified in dev[0] for device random read/write is out of range.	Check the number of blocks specified in dev[0].

Return value (HEX)	Error definition	Corrective action
–8 ($FFF8_H$)	Channel number error The channel number specified in the mdOpen function is invalid.	Check the specified channel number.
–11 ($FFF5_H$)	Insufficient buffer area The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
–12 ($FFF4_H$)	Block error The specified block number of the extension file register is invalid.	Check the block number (device type) of the extension file register.
–13 ($FFF3_H$)	Write protect error The specified block number of the extension file register is overlapping with the write protect area of the memory cassette.	Check the block number (device type) of the extension file register. Check the write protect DIP switch of the accessed memory cassette.
–14 ($FFF2_H$)	Memory cassette error No memory cassette is loaded to the accessed CPU, or an incorrect memory cassette is loaded.	Check the accessed memory cassette.
–15 ($FFF1_H$)	Read area length error The read area size of the read data storage array variable is too small.	Check the read size and read data destination size.
–16 ($FFF0_H$)	Station number error The specified station number is out of range.	Check the specified station number.
–17 ($FFEF_H$)	All-station specification error A function that does not support all-station specification was specified.	Check if all-station specification is enabled for the function.
–18 ($FFEE_H$)	Remote instruction error A code that is not designated was specified.	Check the specified code.
–19 ($FFED_H$)	SEND/RECV channel number error The channel number specified with the SEND/RECV function is out of range.	Specify the channel number within the range (0 to 8).
–21 ($FFEB_H$)	Error in gethostbyname ( ) An error occurred in the function, gethostbyname ( ).	Check if the specified host name exists in the HOSTS file.
–24 ($FFE8_H$)	Time out error in select ( ) A time out error occurred in the function, select ( ).	Check if MGW server service has been started on the server machine. Check if normal Ethernet communication can be performed with the server machine.
–25 ($FFE7_H$)	Error in sendto ( ) An error occurred in the function, sendto ( ).	Check if normal Ethernet communication can be performed with the server machine.
–26 ($FFE6_H$)	Error in recvfrom ( ). An error occured in the function, recvfrom ( ).	
–28 ($FFE4_H$)	Error response reception An error response was received.	
–29 ($FFE3_H$)	Reception data length over Too much data was received.	
–30 ($FFE2_H$)	Sequence number error The received sequence number is abnormal.	
–31 ($FFE1_H$)	DLL load error An attempt to load a DLL, which is necessary to execute the function, has failed.	Setup the package again.
–32 ($FFE0_H$)	Other task/thread is occupying the resource and the resource is not released within 30 seconds.	Restart the PC.
–33 ($FFDF_H$)	Incorrect access destination The setting for the communication destination is incorrect.	
–34 ($FFDE_H$)	Registry open error An attempt to open the registry has failed.	
–35 ($FFDD_H$)	Registry read error An attempt to read from the registry has failed.	
–36 ($FFDC_H$)	Registry write error An attempt to write to the registry has failed.	
–37 ($FFDB_H$)	Communication initialization setting error An attempt to perform initial setting for communication has failed.	Retry. There may be a possibility of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
–38 ($FFDA_H$)	Ethernet communication error	Retry. Check if the communication destination is correctly set by the utility. There may be a possibility of insufficient memory. Terminate other application(s) currently running. Check if the system is operating normally. Reboot the system.
–39 ($FFD9_H$)	COM communication setting error An attempt to set for COM communication has failed.	

Return value (HEX)	Error definition	Corrective action
–41 ($FFD7_H$)	COM control error Control cannot be performed properly during COM communication.	Retry. Check if the system is operating normally. Reboot the system.
–42 ($FFD6_H$)	Close error Communication cannot be closed.	
–43 ($FFD5_H$)	ROM operation error A TC setting value was written to the CPU during ROM operation.	Change the TC setting value during RAM operation.
–44 ($FFD4_H$)	Ladder logic test communication setting error An attempt to set for Ladder logic test communication has failed.	Retry. Check if the communication destination is correctly set by the utility. There may be a problem of insufficient memory. Terminate other application(s) currently running.
–45 ($FFD3_H$)	Ethernet control error Control cannot be performed properly during Ethernet communication.	Retry. Check if the system is operating normally.
-48 ($FFD0_H$)	TEL error.	Exit the program and restart the PC. Setup the package again. Consult with the dealer regarding the problem.
–50 ($FFCE_H$)	Opened path maximum value over The number of open paths exceeds the maximum value (32).	Close several paths.
–51 ($FFCD_H$)	Exclusive control error An error occurred in the exclusive control.	Retry. Check if the system is operating normally.
–4096 to –257 ($F000_H$ to $FEFF_H$)	Errors detected in the MELSECNET/H, MELSECNET/10 network system	MELSECNET/10 network system Refer to the MELSECNET/H, MELSECNET/10 network system reference manual.
–2174 ($F782_H$)	Destination station number specification error The destination station number for the processing request is specifying the host.	Check the destination station number.
–2175 ($F781_H$)	Request destination network number error The number of the destination network to which processing is requested is incorrect.	Check the request destination network number.
–16384 to –12289 ($C000_H$ to $CFFF_H$)	Errors detected in the Ethernet interface module	Refer to the user's manual of the Ethernet interface module.
–20480 to –16385 ($B000_H$ to $BFFF_H$)	Errors detected in the CC-Link system	Refer to the CC-Link system master/local module user's manual. * Refer to the QJ61BT11N User's Manual for whether the cyclic data can be transmitted to/from stations compatible with CC-Link Ver.2.
–24957 ($9E83_H$)	Device points error The number of points specified for the destination station is out of device range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the size.
–24958 ($9E82_H$)	Device number error The device number specified for the destination station is out of range. When specifying the bit device, the device number is not a multiple of 8. (It is checked by the destination link module.)	Check the device number.
–24959 ($9E81_H$)	Device type error The device type specified for the destination station is invalid. (It is checked by the destination link module.)	Check the device type.
–25056 ($9E20_H$)	Received a request that the interface board of the request destination cannot process.	Do not execute the function other than mdTypeRead to the other station interface board.
–26334 (9922_H)	Board reset error Other process has executed a board reset using the same channel while other station is being accessed.	Access to the other station again.
–26336 (9920_H)	Routing to other loop was performed to the MELSECNET/H board.	Change the routing destination to AnUCPU, QnACPU and QCPU.
–28141 (9213_H)	System sleep error Shift to the sleep or the hibernate was detected.	Reboot the system. Change the setting of Power Options to prevent the system from transitioning to sleep or hibernate.
–28151 (9209_H)	APS No. error An incorrect response data was received.	Change the equipment at the process request destination.
–28156 (9204_H)	Shared memory switch error	Remove other optional board. Replace the MELSECNET/H board.
–28158 (9202_H)	WDT error	Take the measures for WDT error occurrence. (Refer to Section 15.7)

∗1: Procedures and sample program for increasing the minimum working set area of the PC

The following provides measures for increasing the minimum working set area of the PC when an error of error code 77 occurs due to MD function execution, and its sample program.
The PC board driver runs using the minimum working set area in the memory area reserved in the user program. Some user program may use a large area of the minimum working set area. In such a case, when the minimum working set area for the PC board driver cannot be reserved, an error code 77 is returned.
If this situation occurs, increase the minimum working set area in the user program before executing the MD function. (See the following sample program.)
The minimum working set area of 200KB is reserved at startup of the personal computer.

Sample program

This section gives a processing overview for setting a greater size to the minimum working set and provides sample programs.

(a) Processing overview of sample program

1) Obtain the user program ID by the GetCurrentProcessID function.
2) Using the ID obtained in step 1), obtain the user program handle by the OpenProcess function.
3) The current minimum and maximum working set sizes can be obtained by executing the GetProcessWorkingSetSize function.
4) Set a size greater than the minimum working set obtained in step 3) and execute the SetProcessWorkingSetSize.
5) Release the user program handle by the CloseHandle function.

(b) Sample program: When setting by Visual Basic® 5.0 or 6.0, .NET2003
(Example of min. working set size 1MB and max. working set size 3MB)
When programming with Visual Basic® 5.0 or 6.0, change the type definition of variables (id, ph, wkmin, wkmax) from Integer to Long.

```
Dim id  As   Integer          'User program ID variable
Dim ph As   Integer          'User program handle variable
Dim wkmin  As  Integer       'Minimum working set variable
Dim wkmax As  Integer        'Maximum working set variable
Dim bret  As  Boolean        'Return
'Obtain the user program ID
id = GetCurrentProcessID()
'Open the user program handle
'PROCESS_SET_QUOTA = 256,PROCESS_QUERY_INFORMATION = 1024
ph = OpenProcess(256 + 1024,False,id)
'Obtain the maximum working set size and minimum working set size of the user program
bret = GetProcessWorkingSetSize(ph,wkmin,wkmax)
'Set the minimum working set size to 1MB
wkmin = 1 * 1024 * 1024
'Set the maximum working set size to 3MB
wkmax = 3 * 1024 * 1024
'Change the maximum working set size and minimum working set size of the user program
bret = SetProcessWorkingSetSize(ph,wkmin,wkmax)
'Close the user program handle
bret = CloseHandle(ph)
```

The set sizes shown here are reference sizes. Adjust the sizes in accordance with your system.

(c) Sample program: When setting by Visual C++® 5.0 or 6.0, .NET2003
(Example of min. working set size 1MB and max. working set size 3MB)

```
#define ERROR   -1
short ChangeWorkingSetSize()
{
    DWORD    dwProcessId;                /*User program ID variable*/
    HANDLE   hProcess;                   /*User program handle variable*/
    DWORD    dwMinimumWorkingSetSize;    /*Minimum working set variable*/
    DWORD    dwMaximumWorkingSetSize;    /*Maximum working set variable*/

    /*Obtain the user program ID*/
    dwProcessId = GetCurrentProcessId();

    /*Open the user program handle*/
    hProcess =
    OpenProcess(PROCESS_SET_QUOTA+PROCESS_QUERY_INFORMATION,FALSE,dwProcessId);
    if(hProcess == NULL){
            /*Error end*/
            return(ERROR);
    }

    /*Obtain the maximum working set size and minimum working set size of the user program */
    if(GetProcessWorkingSetSize(hProcess,&dwMinimumWorkingSetSize,&dwMaximumWorkingSetSize)==0){
            /*Error end*/
            CloseHandle(hProcess);
            return(ERROR);
    }

    /*Set the minimum working set size to 1MB*/
    dwMinimumWorkingSetSize = 1 * 1024 * 1024;
    /*Set the maximum working set size to 3MB*/
    dwMaximumWorkingSetSize = 3 * 1024 * 1024;

    /*Change the maximum working set size and minimum working set size of the user program */
    if(SetProcessWorkingSetSize(hProcess,dwMinimumWorkingSetSize,dwMaximumWorkingSetSize)==0){
            /*Error end*/
            CloseHandle(hProcess);
            return(ERROR);
    }

    /*Close the user program handle*/
    CloseHandle(hProcess);

    /*Normal return*/
    return(0);
```

The set sizes shown here are reference sizes. Adjust the sizes according to your system.

15 TROUBLESHOOTING

This chapter describes how to determine the cause of trouble that may occur during system construction as well as appropriate corrective actions.

15.1 When Performing Troubleshooting

Ideally occurrence of trouble should be kept to a minimum in order to startup the system effectively. However, once an error occurs, it is important that we identify the cause as quickly as possible.
The following are the three basic points that must be kept in mind when performing troubleshooting.

(1) Visual check

Check the following points.

(a) Movement of the external device (status when stopped or during operation)

(b) On/off status of power supply

(c) Wiring condition (cable)

(d) LED display status (power supply display LED)

After checking (a) through (d), connect the external device and check the operation of the user program.

(2) Confirming the error

Examine how the error status changes by the following operation.

(a) Change the input status and check if the change can be read correctly using the test program.

(b) Repeat on/off of output and check if the status of the external device changes accordingly.

(3) Narrowing the range

Based on the steps (1) and (2) above, deduce the range of error location as one of the following.

(a) PC side or external device side

(b) PC main body or board

(c) Cable

(d) User program

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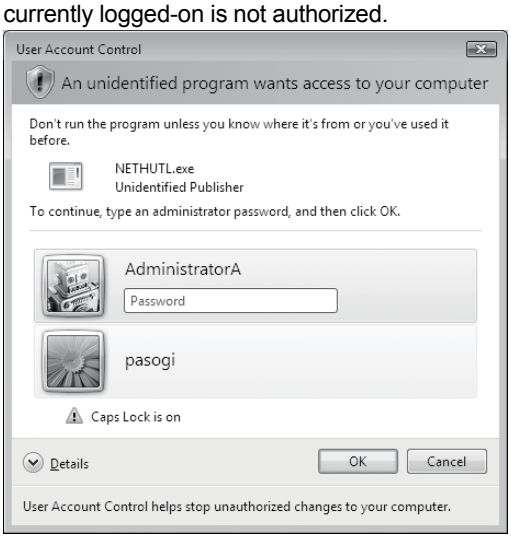
15.2 Cause Determination Methods by Type of Trouble

When an error occurs, use the table below to find the section that describes an appropriate method to determine the cause.

No.	Error detail	Cause determination method/Action
1	MELSECNET/H board did not operate normally upon startup.	See the flowchart in 15.3.
2	Data link is not achieved after the MELSECNET/H board and control station as well as other normal stations were connected.	See the flowchart in 15.4.
3	An error occurred while conducting data link. 1) An unexpected value is input to a specific link device (B, W, X, Y). 2) Data cannot be written or read even though device access has been performed using communication functions with the user program. 3) Communication is occasionally disabled while running the user program. 4) The system went down (the blue screen) or a system reset has been executed in the Operating Systems.	See the flowchart in 15.5.
4	The external power supply function of the Q80BD-J71LP21S-25 does not work properly.	See the flowchart in 15.6.
5	The personal computer has slowed down. 1) Operations with the mouse or keyboard are slow. 2) Operations of other applications are slow. 3) The CPU usage is high. 4) Operations by the sound function are unstable.	See Section 15.8.
6	The software is not normally installed. The setup screen remains even after selecting to restart the system at the completion of the utility installation.	1) Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver. Or update the Windows operating system. 2) Perform the operations described in the POINT of Section 8.1.3.
7	Uninstallation is not executed normally. Although the message "SW□DNC-MNETH-B has been successfully uninstalled from your machine" is displayed on the screen, the uninstallation is not complete.	1) Logon as a user with administrator authority and execute the uninstallation. 2) Check if the display settings on the [Device Manager] or other relevant functions are correct, and install an appropriate display driver. Or update the Windows operating system. 3) Perform the operations described in the POINT of Section 8.3.
8	An error message is displayed in utility. 1) "It failed to read the utility file version" is displayed. 2) "It failed to read the driver package version" is displayed. 3) "It is failed to write the board setting data" is displayed. 4) "It is failed to write the target setting data" is displayed.	Logon as a user with administrator authority and execute utility (See POINT in Section 9.1.) or reinstall the operating system.

No.	Error detail	Cause determination method/Action
9	The following User Account Control screen is displayed and a password is requested while a utility is running. (Only when using Windows Vista®)	If the following User Account Control screen appears and requests an authorized user to enter his/her password, while a utility is being run using Windows Vista® ＊1, the user who is currently logged-on is not authorized.  In this case, log-off once, and log-in again as an authorized user. Then run the utility. ＊2

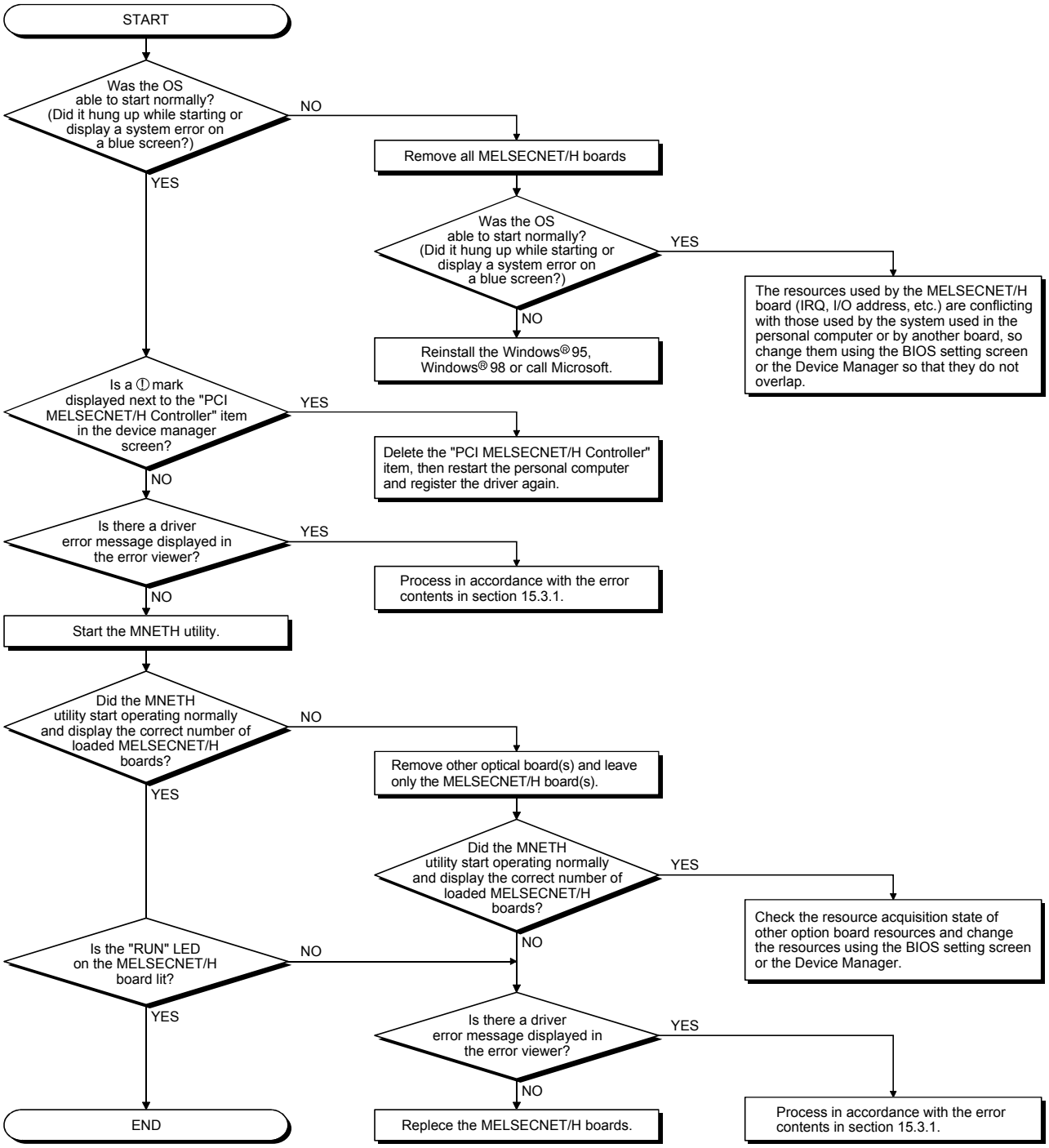
＊1: If only one authorized user account is available, the User Account Control screen requests the password of that user only.

＊2: For details on how to prevent this screen from being displayed, refer to Appendix 4.

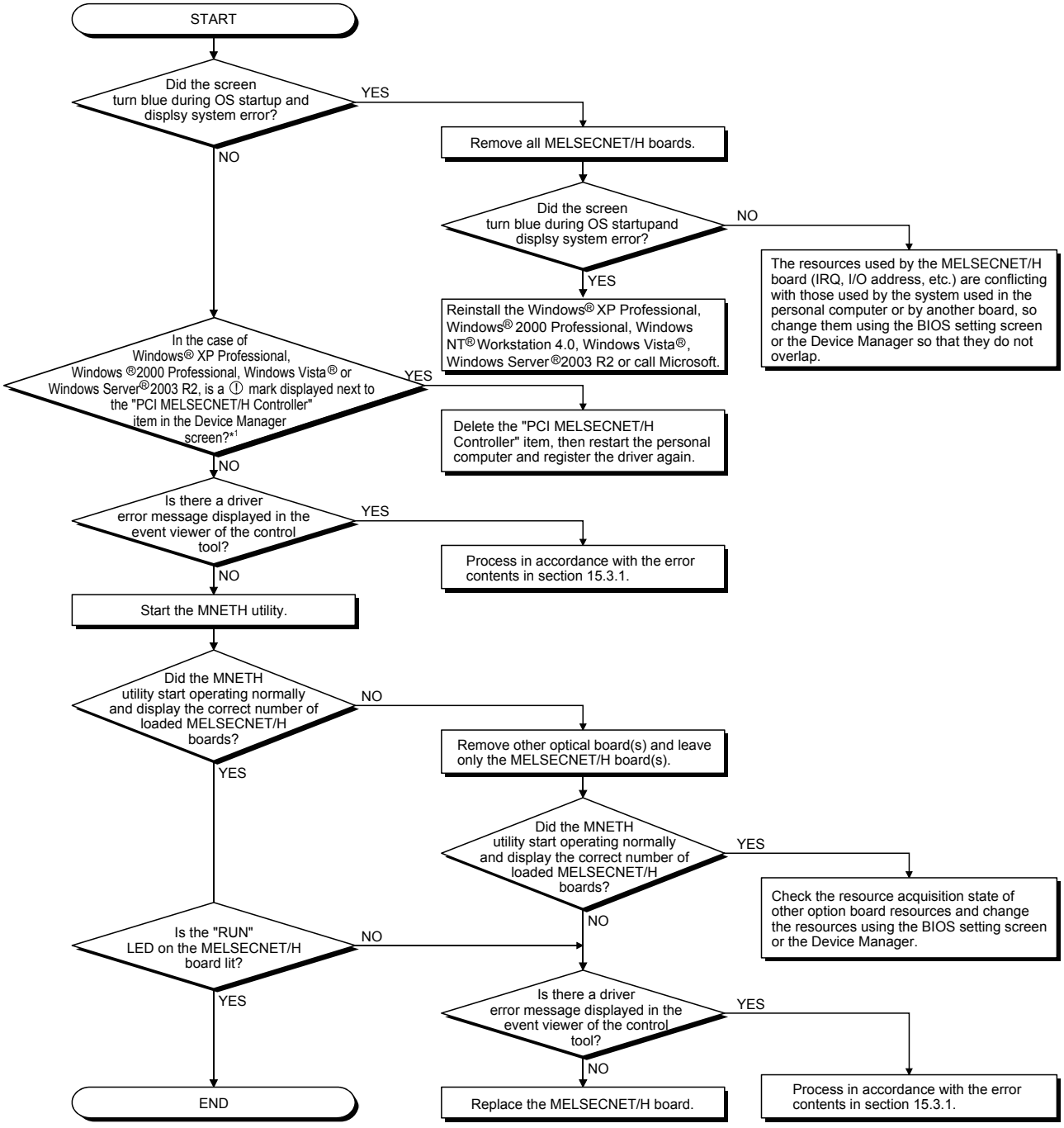
15.3 Flowchart to Use when MELSECNET/H Board did not Operate Normally

The following describes a flowchart that must be checked for each PC when an MELSECNET/H board did not operate normally upon startup.

(1) For Windows® 95, Windows® 98


START
Was the OS able to start normally? (Did it hung up while starting or display a system error on a blue screen?)
NO
YES
Remove all MELSECNET/H boards
Was the OS able to start normally? (Did it hung up while starting or display a system error on a blue screen?)
YES
The resources used by the MELSECNET/H board (IRQ, I/O address, etc.) are conflicting with those used by the system used in the personal computer or by another board, so change them using the BIOS setting screen or the Device Manager so that they do not overlap.
NO
Reinstall the Windows® 95, Windows® 98 or call Microsoft.
Is a ⓘ mark displayed next to the "PCI MELSECNET/H Controller" item in the device manager screen?
YES
Delete the "PCI MELSECNET/H Controller" item, then restart the personal computer and register the driver again.
NO
Is there a driver error message displayed in the error viewer?
YES
Process in accordance with the error contents in section 15.3.1.
NO
Start the MNETH utility.
Did the MNETH utility start operating normally and display the correct number of loaded MELSECNET/H boards?
NO
Remove other optical board(s) and leave only the MELSECNET/H board(s).
YES
Did the MNETH utility start operating normally and display the correct number of loaded MELSECNET/H boards?
YES
Check the resource acquisition state of other option board resources and change the resources using the BIOS setting screen or the Device Manager.
NO
Is the "RUN" LED on the MELSECNET/H board lit?
NO
YES
Is there a driver error message displayed in the error viewer?
YES
NO
END
Replece the MELSECNET/H boards.
Process in accordance with the error contents in section 15.3.1.

(2) For Windows Vista® , Windows® XP Professional, Windows Server® 2003 R2, Windows® 2000 Professional, Windows NT® Workstation 4.0


START
Did the screen turn blue during OS startup and displsy system error?
YES
NO
Remove all MELSECNET/H boards.
Did the screen turn blue during OS startupand displsy system error?
NO
YES
The resources used by the MELSECNET/H board (IRQ, I/O address, etc.) are conflicting with those used by the system used in the personal computer or by another board, so change them using the BIOS setting screen or the Device Manager so that they do not overlap.
Reinstall the Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0, Windows Vista®, Windows Server®2003 R2 or call Microsoft.
In the case of Windows® XP Professional, Windows ®2000 Professional, Windows Vista® or Windows Server®2003 R2, is a ① mark displayed next to the "PCI MELSECNET/H Controller" item in the Device Manager screen?*1
YES
NO
Delete the "PCI MELSECNET/H Controller" item, then restart the personal computer and register the driver again.
Is there a driver error message displayed in the event viewer of the control tool?
YES
NO
Process in accordance with the error contents in section 15.3.1.
Start the MNETH utility.
Did the MNETH utility start operating normally and display the correct number of loaded MELSECNET/H boards?
NO
YES
Remove other optical board(s) and leave only the MELSECNET/H board(s).
Did the MNETH utility start operating normally and display the correct number of loaded MELSECNET/H boards?
YES
NO
Check the resource acquisition state of other option board resources and change the resources using the BIOS setting screen or the Device Manager.
Is the "RUN" LED on the MELSECNET/H board lit?
NO
YES
Is there a driver error message displayed in the event viewer of the control tool?
YES
NO
END
Replace the MELSECNET/H board.
Process in accordance with the error contents in section 15.3.1.

*1: For Windows Vista® , a ⑦ mark is displayed when the driver is registered normally.

15.3.1 Table of error event messages that may occur during driver startup

The following table lists the errors displayed in the event viewer/error viewer.

(1) Windows® 95, Windows® 98

Event ID (0 to FFFF$_H$)	Error content	Corrective action
257 (101$_H$)	The MELSECNET/H board is not loaded, or the I/O address is overlapping with other hardware.	Change the I/O address setting for the MELSECNET/H board or other hardware. ＊1
258 (102$_H$)	No response from hardware.	Replace the MELSECNET/H board.
259 (103$_H$)	The number of MELSECNET/H boards detected exceeds the maximum number that can be loaded.	Remove MELSECNET/H boards until the number falls within the maximum limit.
260 (104$_H$)	The MELSECNET/H board conflicts with other device.	Check for overlapping setting with other optional board.
264 (108$_H$)	An attempt to perform interrupt registration has failed.	
288 (120$_H$)	A WDT error occurred on the MELSECNET/H board driver side.	Remove another option board. Take actions for the WDT error. (Refer to Section 15.7.)
295 (127$_H$)	A WDT error occurred on the board side.	Replace the MELSECNET/H board.

(2) Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0, Windows Vista®

Event ID (0 to FFFF$_H$)	Error content	Corrective action
0 (0$_H$)	Failed to start the MELSEC network service. Failed to register the main thread of service, or failed to set the service status.	Restart the PC. If the error persists, reinstall Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0.
256 (100$_H$)	The driver could not be executed because an error occurred during driver startup.	Reinstall the driver package. If the error still occurs, reinstall Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0.
257 (101$_H$)	The MELSECNET/H board is not loaded, or the I/O address is overlapping with other hardware.	Change the I/O address setting for the MELSECNET/H board or other hardware. ＊1
258 (102$_H$)	No response from hardware.	Replace the MELSECNET/H board.
259 (103$_H$)	The number of MELSECNET/H boards detected exceeds the maximum number that can be loaded.	Remove MELSECNET/H boards until the number falls within the maximum limit
260 (104$_H$)	The board conflicts with other device.	Check for overlapping setting with other optional board.
261 (105$_H$)	An attempt to create a device object has failed.	Increase the system memory.
262 (106$_H$)	An attempt to link the device name has failed.	Reinstall Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0.
263 (107$_H$)	An attempt to secure dual-port memory has failed.	Check for overlapping setting with other optional board.
264 (108$_H$)	An attempt to perform interrupt registration has failed.	
265 (109$_H$)	An error occurred when reading I/O.	Replace the MELSECNET/H board.
266 (10A$_H$)	An error occurred when writing I/O.	
267 (10B$_H$)	An error occurred during memory transfer.	Reinstall Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0.
268 (10C$_H$)	An error occurred during receiving process.	——
269 (10D$_H$)	An error occurred during sending process.	——
270 (10E$_H$)	An error occurred during interrupt process.	Reinstall Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation 4.0.
271 (10F$_H$)	An error occurred during UNLOAD process.	
272 (110$_H$)	An error occurred during StartIo process.	
273 (111$_H$)	An error occurred during critical session.	
274 (112$_H$)	An error occurred during IoTimer process.	
275 (113$_H$)	An error occurred during IoCompletion process.	
276 (114$_H$)	An error occurred during DPC process.	
277 (115$_H$)	An error occurred when opening registry database.	
278 (116$_H$)	An error occurred when reading from registry database.	

Event ID 0 to FFFF$_H$	Error content	Corrective action
279 (117$_H$)	An error occurred when writing to registry database.	1) Occurs when the driver for the MELSECNET/H board was installed first. After installing SW0DNC-MNETH-B, restart the computer and confirm that this error does not occur. 2) Increase the system memory and disk capacity.
280 (118$_H$)	A request that cannot be processed was received from other station.	——
281 (119$_H$)	Retry transmission was executed during transmission process.	——
288 (120$_H$)	A WDT error occurred on the MELSECNET/H board driver side.	Remove another option board. Take actions for the WDT error. (Refer to Section 15.7.)
295 (127$_H$)	A WDT error occurred on the board side.	Replace the MELSECNET/H board.
305 (131$_H$)	Shift to the sleep or the hibernate was detected.	Change the setting of Power Options to prevent the system from transitioning to sleep or hibernate.
33027 (8103$_H$)	The driver is not yet started, or an error occurred while opening the driver.	Correct the cause of the driver error, then restart the PC.
33029 (8105$_H$)	An error occurred while resetting the MELSECNET/H board. One of the following two conditions is suspected as the cause. 1) The common memory area used by the MELSECNET/H board may be in contention with other device. 2) No response was received from the MELSECNET/H board.	1) Check for overlapping setting with other optional board. 2) Perform memory and I/O diagnosis using the MNETH utility. If the error persists, replace the MELSECNET/H board.

∗1 : If an event error occurs in event viewer or error viewer, make the following setup setting on the PC.
(Limited to the PC includes those setup setting items.)

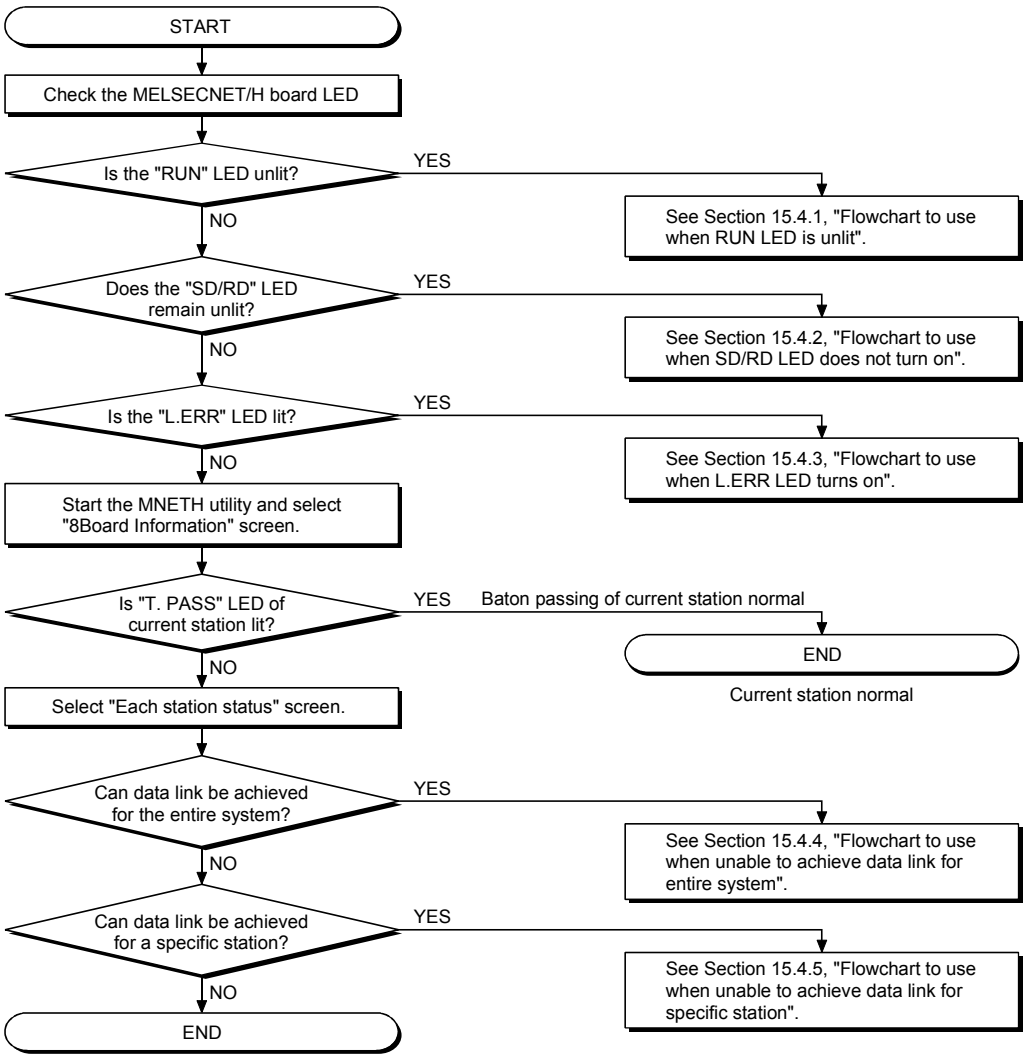
Example)
BIOS Setup Utility

Plug & Play O/S : [YES] → [No]
Reset Configuration Data : [No] → [YES]

Then, restart the PC.

15.4 Flowchart to Use when Data Link is not Achieved

The following describes a flowchart that must be checked when no data link is achieved after the MELSECNET/H board and Control station as well as normal stations were connected.


START
Check the MELSECNET/H board LED
Is the "RUN" LED unlit?
YES
See Section 15.4.1, "Flowchart to use when RUN LED is unlit".
NO
Does the "SD/RD" LED remain unlit?
YES
See Section 15.4.2, "Flowchart to use when SD/RD LED does not turn on".
NO
Is the "L.ERR" LED lit?
YES
See Section 15.4.3, "Flowchart to use when L.ERR LED turns on".
NO
Start the MNETH utility and select "8Board Information" screen.
Is "T. PASS" LED of current station lit?
YES
Baton passing of current station normal
END
Current station normal
NO
Select "Each station status" screen.
Can data link be achieved for the entire system?
YES
See Section 15.4.4, "Flowchart to use when unable to achieve data link for entire system".
NO
Can data link be achieved for a specific station?
YES
See Section 15.4.5, "Flowchart to use when unable to achieve data link for specific station".
NO
END

POINT

Refer to the following when the "T. PASS" LED lights up and goes out randomly.

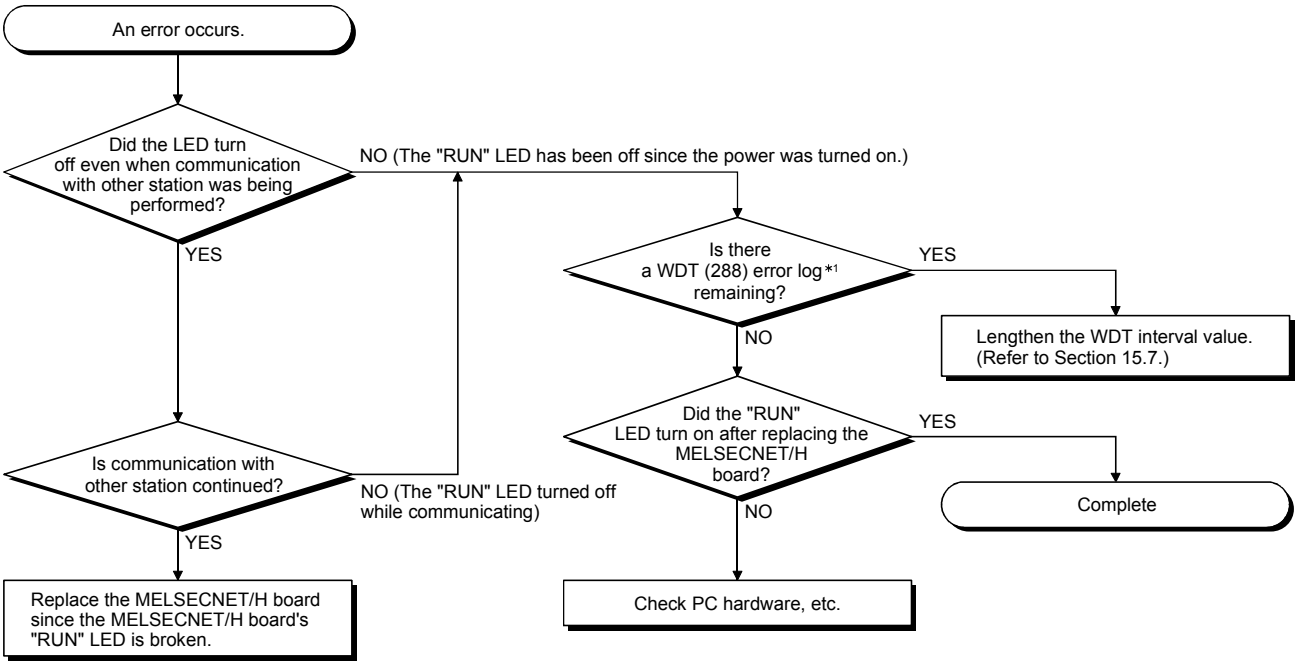
<Cause>

The line may have been in an unstable condition.

<Action>

1) Check the connector for disconnection and the cable for breakage.
2) Verify that the specified cable is used.
3) Check that the overall extension cable length and station-to-station distance is within the specified range.

15.4.1 Flowchart to use when RUN LED is unlit

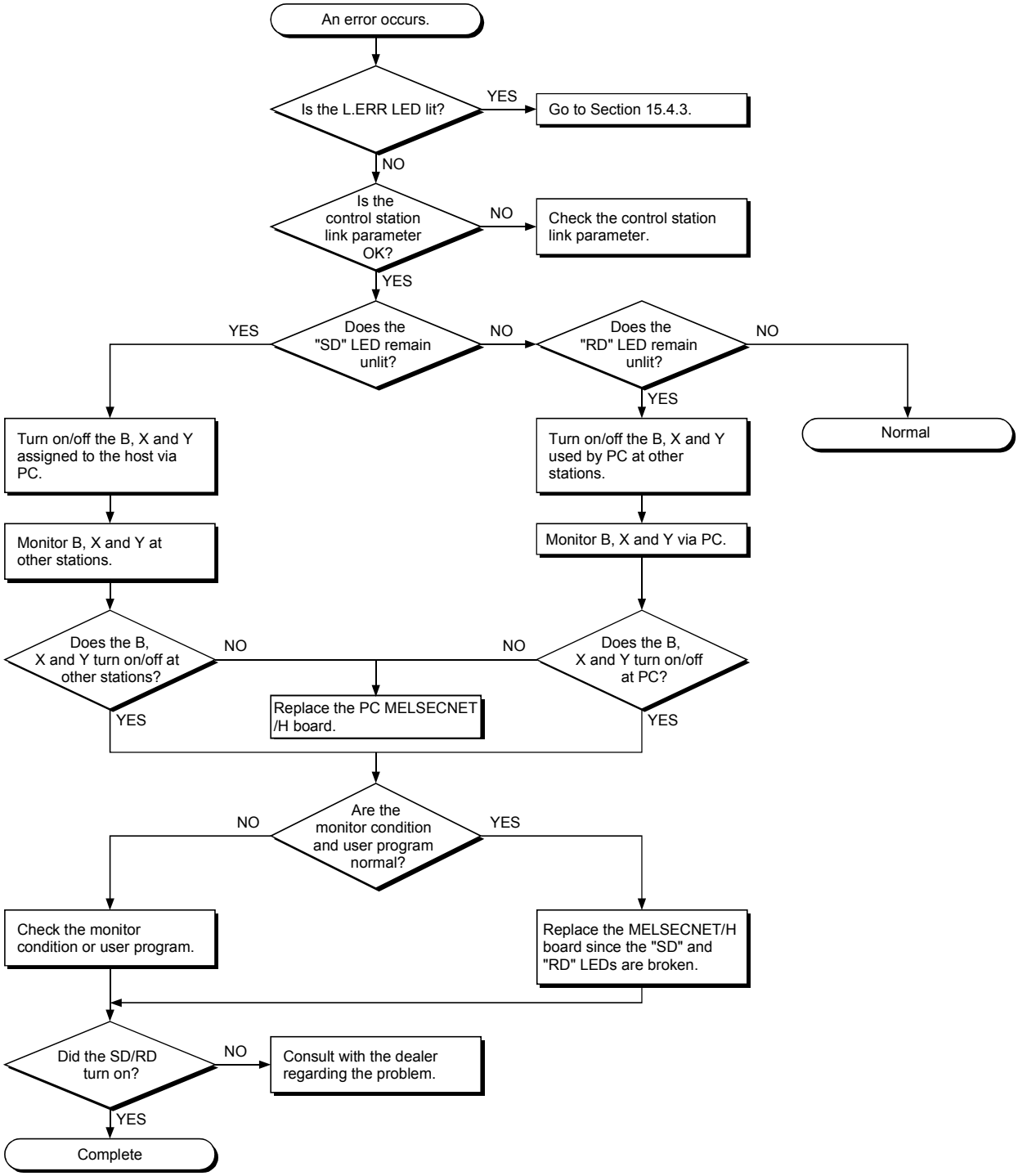

An error occurs.
Did the LED turn off even when communication with other station was being performed?
NO (The "RUN" LED has been off since the power was turned on.)
YES
Is there a WDT (288) error log*1 remaining?
YES
Lengthen the WDT interval value. (Refer to Section 15.7.)
NO
Did the "RUN" LED turn on after replacing the MELSECNET/H board?
YES
Complete
NO
Check PC hardware, etc.
Is communication with other station continued?
NO (The "RUN" LED turned off while communicating)
YES
Replace the MELSECNET/H board since the MELSECNET/H board's "RUN" LED is broken.

*1: WDT error logs can be checked on the following screens:

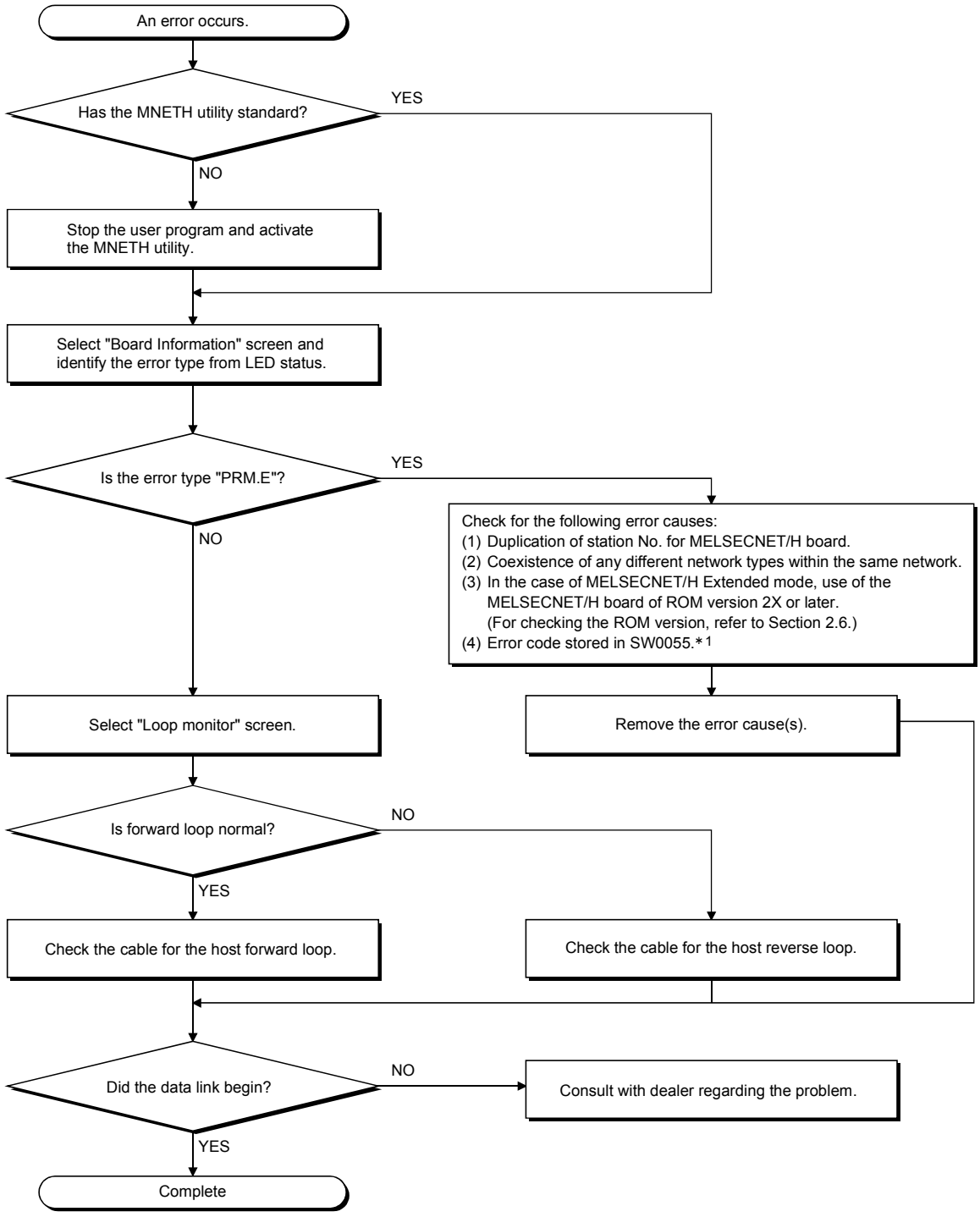
- For Windows® 95, Windows® 98
  The error viewer of the utility (Refer to Section 9.4.)
- For Windows® XP Professional, Windows® 2000 Professional, Windows NT® Workstation4.0
  The event viewer of the control tools

15.4.2 Flowchart to use when SD/RD LED does not turn on

The board information screen of MNETH utility displays SD and RD LED status. This function is the same as the MELSECNET/H board's LED messages.

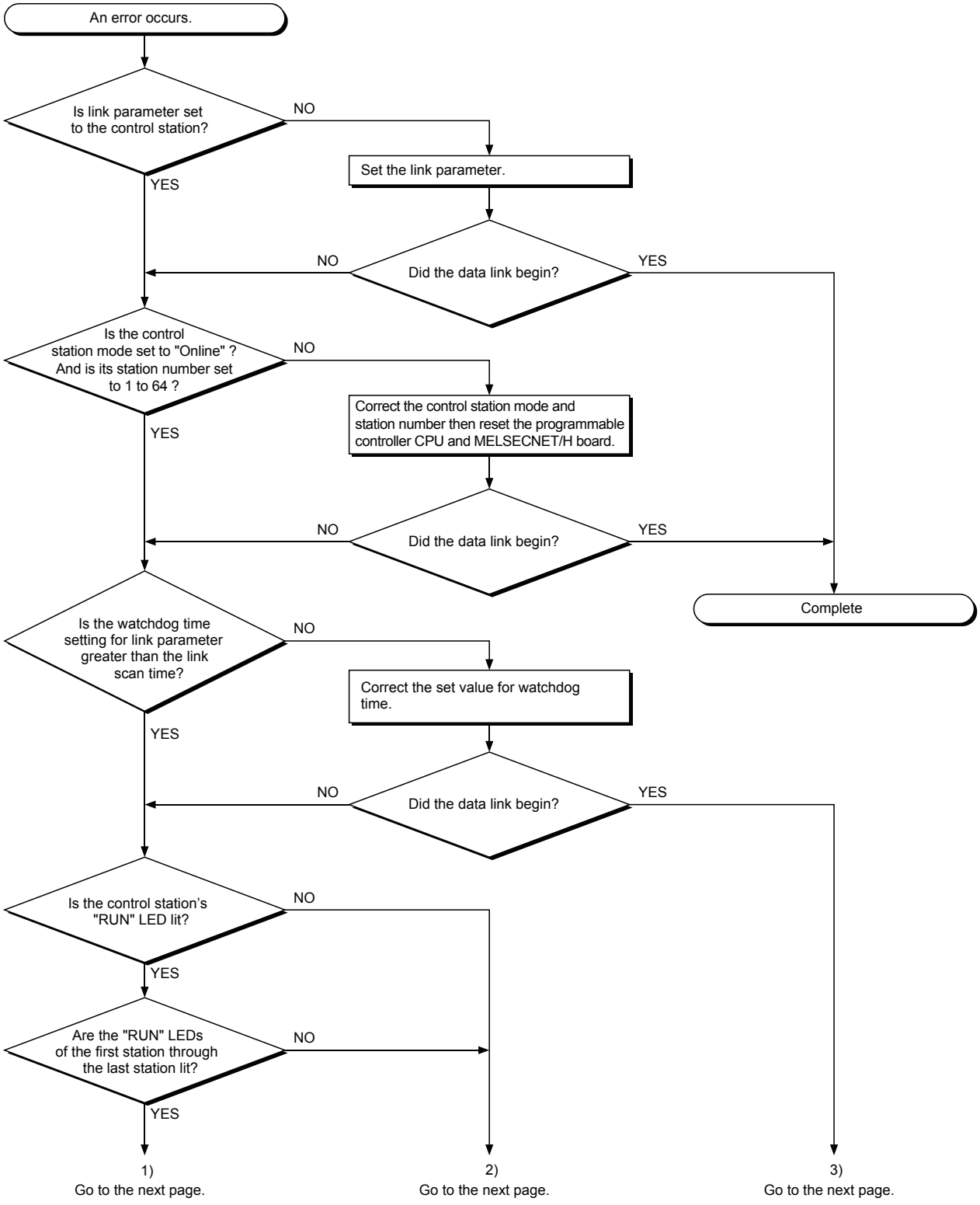

An error occurs.
Is the L.ERR LED lit?
YES
Go to Section 15.4.3.
NO
Is the control station link parameter OK?
NO
Check the control station link parameter.
YES
Does the "SD" LED remain unlit?
YES
NO
Does the "RD" LED remain unlit?
NO
YES
Normal
Turn on/off the B, X and Y assigned to the host via PC.
Turn on/off the B, X and Y used by PC at other stations.
Monitor B, X and Y at other stations.
Monitor B, X and Y via PC.
Does the B, X and Y turn on/off at other stations?
NO
NO
Does the B, X and Y turn on/off at PC?
YES
Replace the PC MELSECNET /H board.
YES
Are the monitor condition and user program normal?
NO
YES
Check the monitor condition or user program.
Replace the MELSECNET/H board since the "SD" and "RD" LEDs are broken.
Did the SD/RD turn on?
NO
Consult with the dealer regarding the problem.
YES
Complete

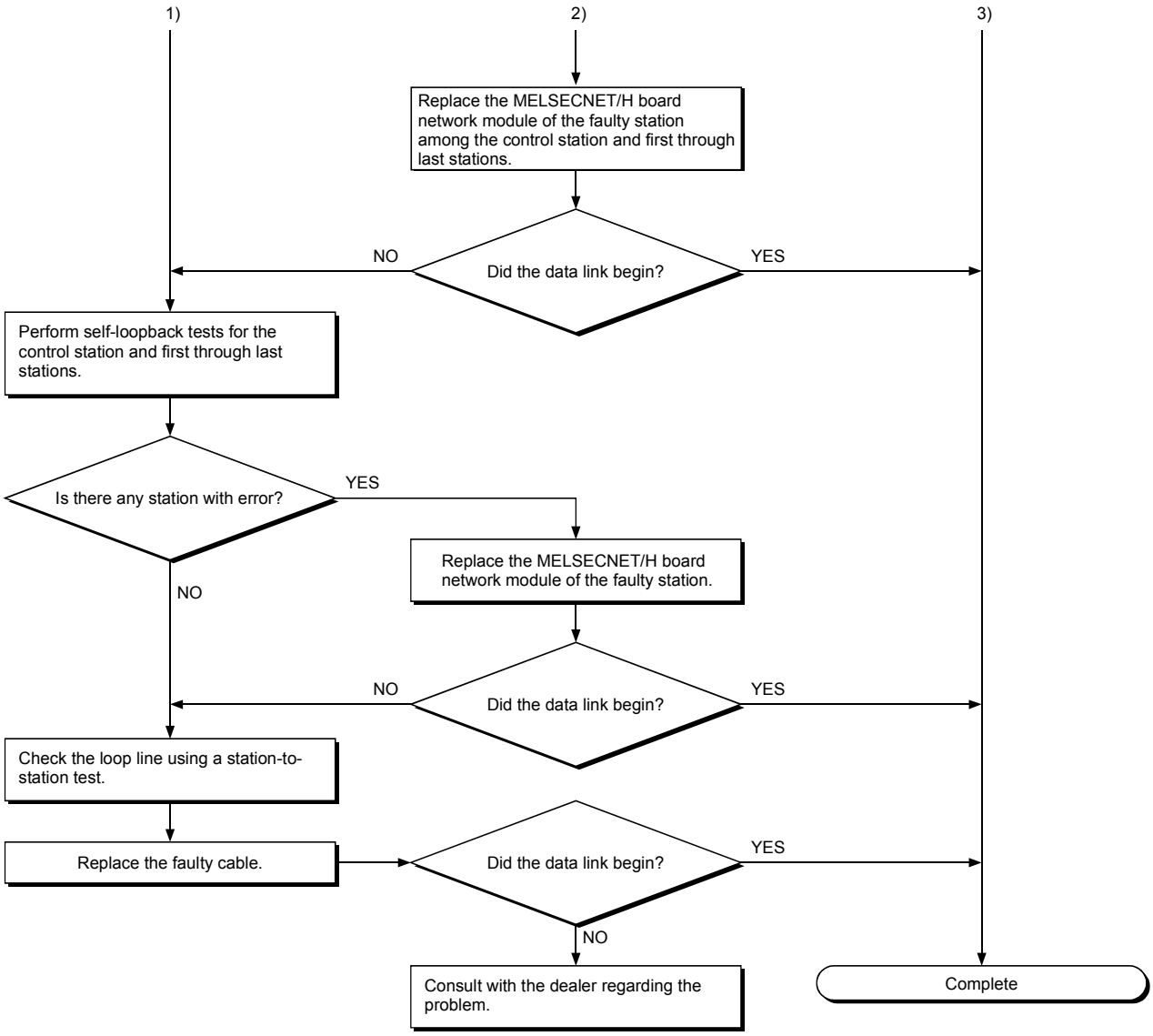
15.4.3 Flowchart to use when L.ERR. LED turns on


An error occurs.
Has the MNETH utility standard?
YES
NO
Stop the user program and activate the MNETH utility.
Select "Board Information" screen and identify the error type from LED status.
Is the error type "PRM.E"?
YES
NO
Check for the following error causes:
(1) Duplication of station No. for MELSECNET/H board.
(2) Coexistence of any different network types within the same network.
(3) In the case of MELSECNET/H Extended mode, use of the MELSECNET/H board of ROM version 2X or later.
(For checking the ROM version, refer to Section 2.6.)
(4) Error code stored in SW0055.*1
Select "Loop monitor" screen.
Remove the error cause(s).
Is forward loop normal?
NO
YES
Check the cable for the host forward loop.
Check the cable for the host reverse loop.
Did the data link begin?
NO
Consult with dealer regarding the problem.
YES
Complete

*1: For the error code in SW0055, refer to the Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network).
The error code in SW0085 can be also checked by monitoring SD85 with Device Monitor Utility. (Refer to Section 9.3.)

15.4.4 Flowchart to use when unable to achieve data link for entire system


An error occurs.
Is link parameter set to the control station?
NO
Set the link parameter.
YES
Did the data link begin?
NO
YES
Is the control station mode set to "Online" ? And is its station number set to 1 to 64 ?
NO
Correct the control station mode and station number then reset the programmable controller CPU and MELSECNET/H board.
YES
Did the data link begin?
NO
YES
Complete
Is the watchdog time setting for link parameter greater than the link scan time?
NO
Correct the set value for watchdog time.
YES
Did the data link begin?
NO
YES
Is the control station's "RUN" LED lit?
NO
YES
Are the "RUN" LEDs of the first station through the last station lit?
NO
YES
1)
Go to the next page.
2)
Go to the next page.
3)
Go to the next page.


1)
2)
3)
Replace the MELSECNET/H board network module of the faulty station among the control station and first through last stations.
NO
Did the data link begin?
YES
Perform self-loopback tests for the control station and first through last stations.
Is there any station with error?
YES
Replace the MELSECNET/H board network module of the faulty station.
NO
NO
Did the data link begin?
YES
Check the loop line using a station-to-station test.
Replace the faulty cable.
Did the data link begin?
YES
NO
Consult with the dealer regarding the problem.
Complete

REMARK

For the Q80BD-J71LP21-25, Q81BD-J71LP21-25 or Q80BD-J71LP21S-25 with the communication speed set to 25 Mbps, mounting multiple boards with the same network No. is not allowed. Doing so may cause errors at all stations at the time of OS startup/shutdown or when resetting the board. If multiple boards with the same network No. should be installed, set the communication speed to 10Mbps.

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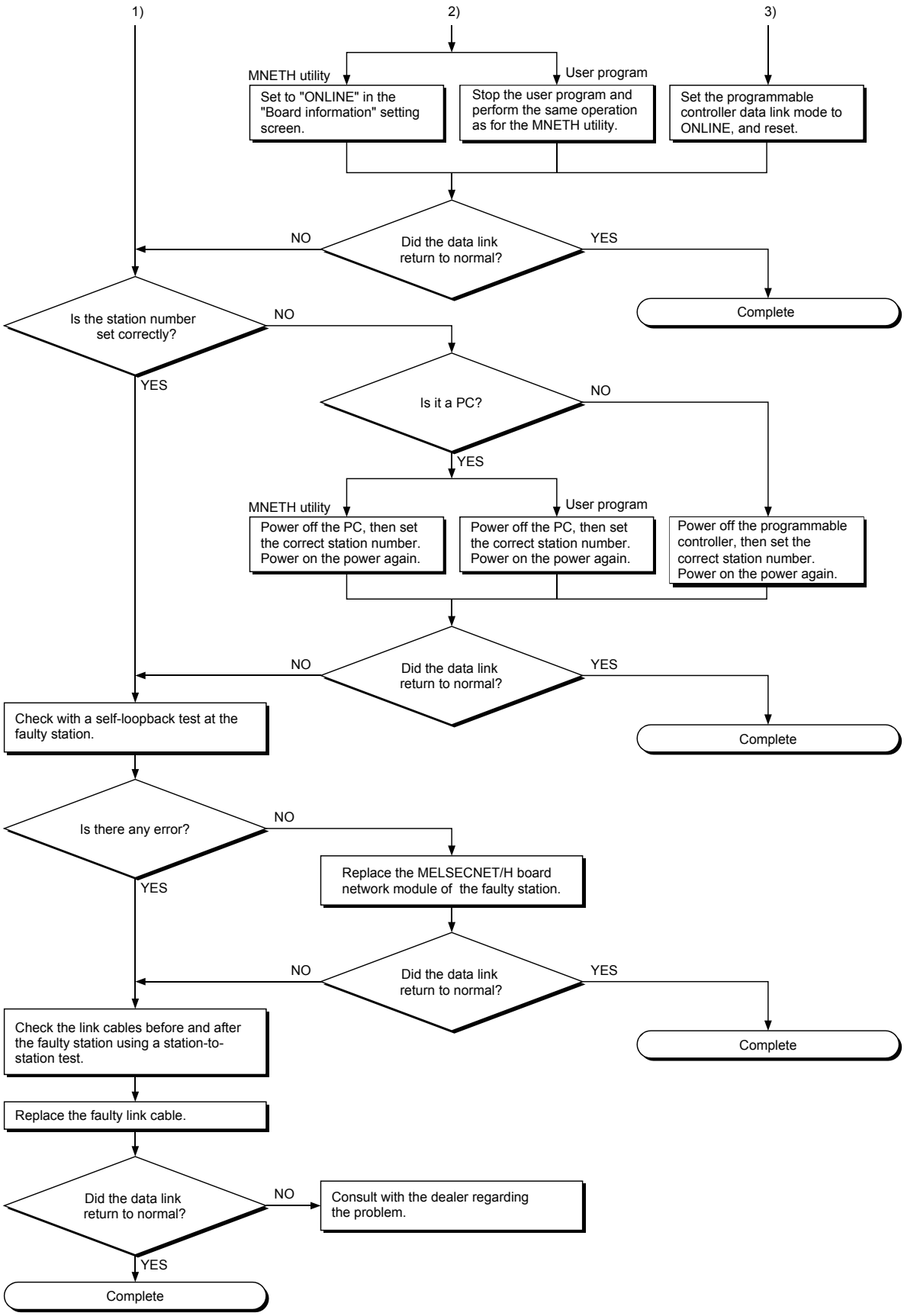
15.4.5 Flowchart to use when unable to achieve data link for specific station

*1: When a faulty station is detected, check if the data link cable of the faulty station is connected properly.
If the data link cable is disconnected, make sure to power off the personal computer and external power supply before reconnecting the cable.


1)
2)
3)
MNETH utility
User program
Set to "ONLINE" in the "Board information" setting screen.
Stop the user program and perform the same operation as for the MNETH utility.
Set the programmable controller data link mode to ONLINE, and reset.
Did the data link return to normal?
NO
YES
Complete
Is the station number set correctly?
NO
YES
Is it a PC?
NO
YES
MNETH utility
User program
Power off the PC, then set the correct station number. Power on the power again.
Power off the PC, then set the correct station number. Power on the power again.
Power off the programmable controller, then set the correct station number. Power on the power again.
Did the data link return to normal?
NO
YES
Complete
Check with a self-loopback test at the faulty station.
Is there any error?
NO
YES
Replace the MELSECNET/H board network module of the faulty station.
Did the data link return to normal?
NO
YES
Complete
Check the link cables before and after the faulty station using a station-to-station test.
Replace the faulty link cable.
Did the data link return to normal?
NO
Consult with the dealer regarding the problem.
YES
Complete

15.5 Flowchart to Use when Error Occurred During Data Link

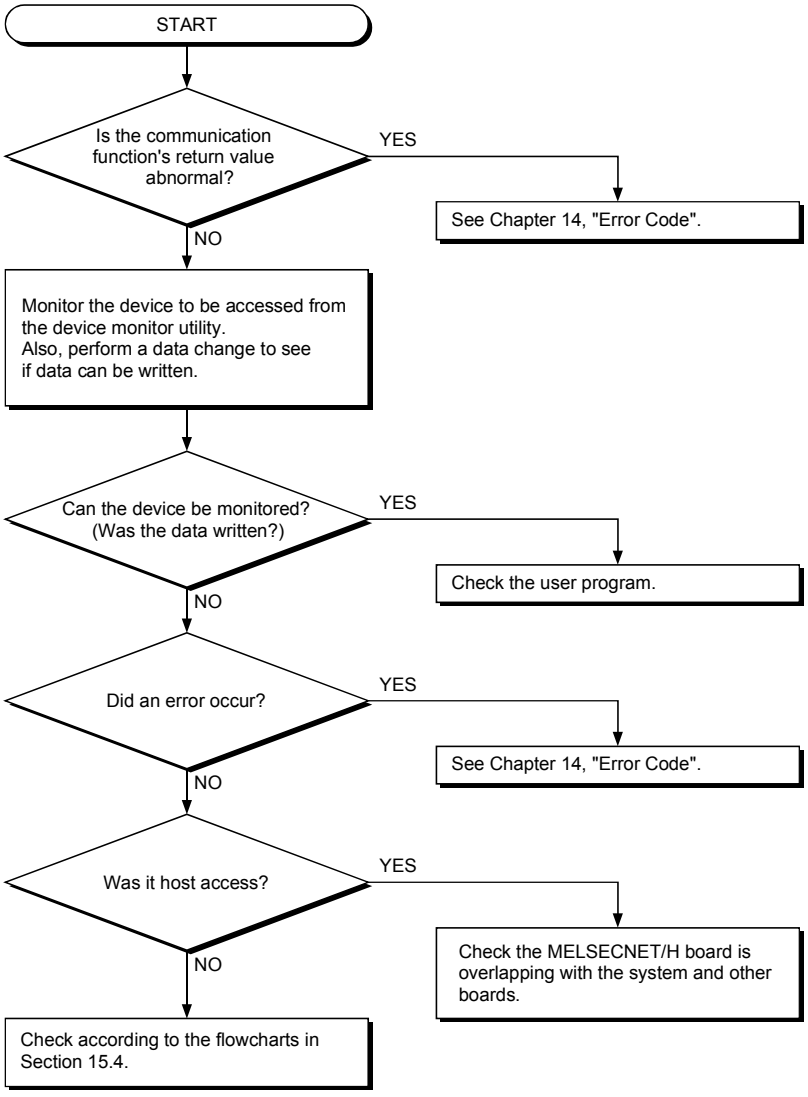
The following explains corrective actions when an error occurred during data link.

15.5.1 Flowchart to use when unexpected value is input to specific link device

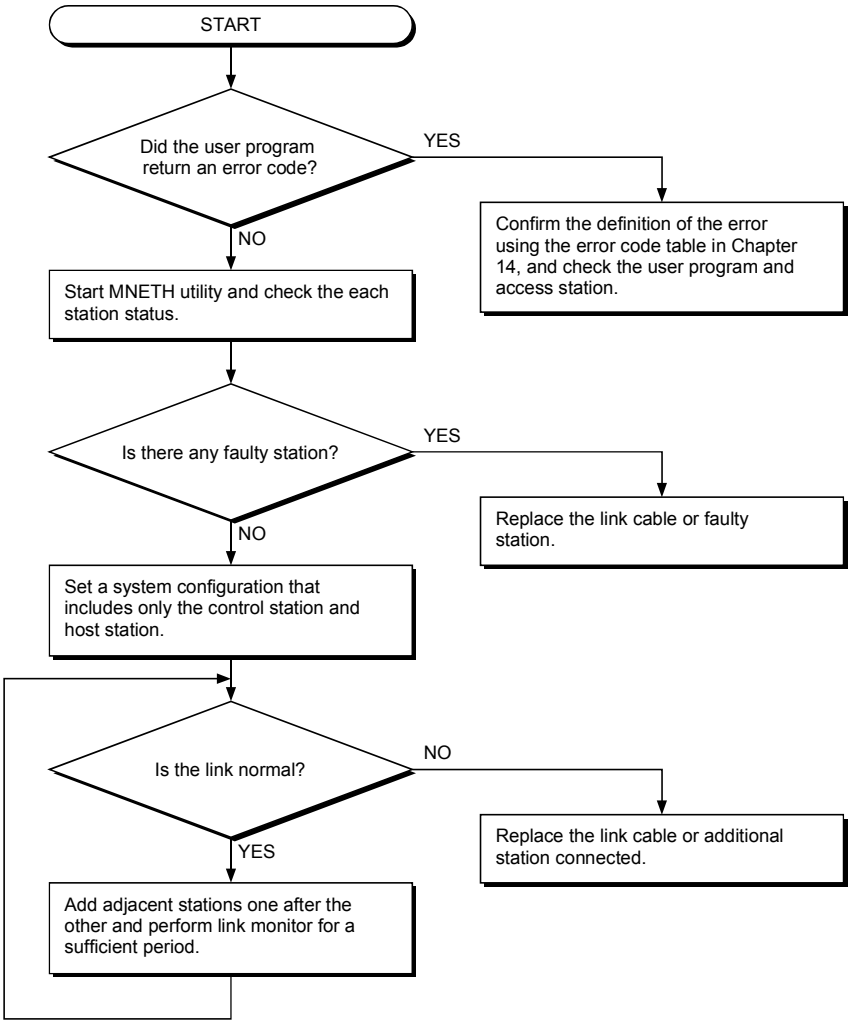
Check the following items.

(1) Check for a station with link error using the each station status screen.
(2) Check the link parameter assignment range at the control station.
(3) Check the device range used in the programmable controller program at the programmable controller.
(4) Check, in the user program, argument data for the Data Link function accessing the specific link device.

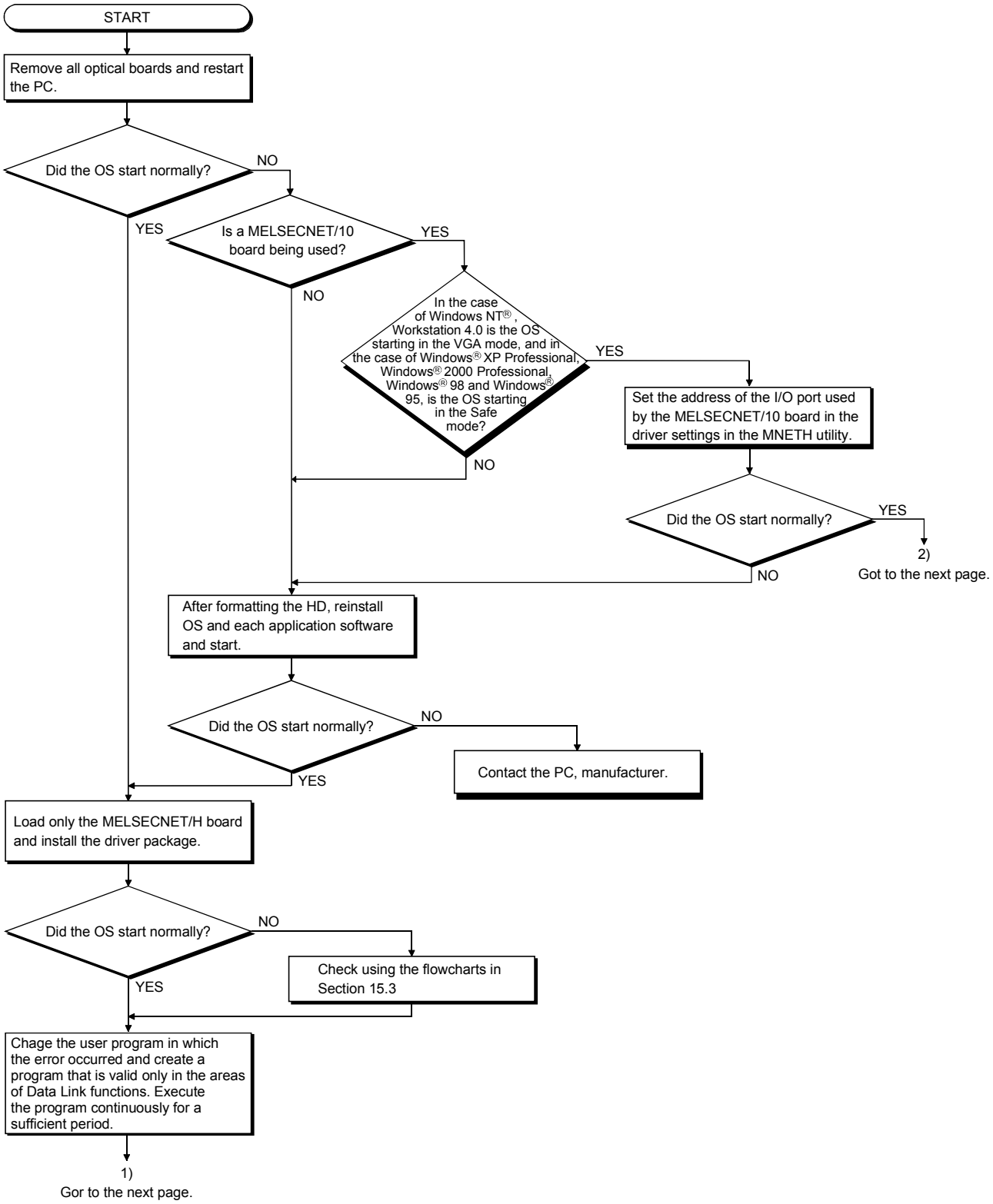
15.5.2 Flowchart to use when data cannot be written or read in user program

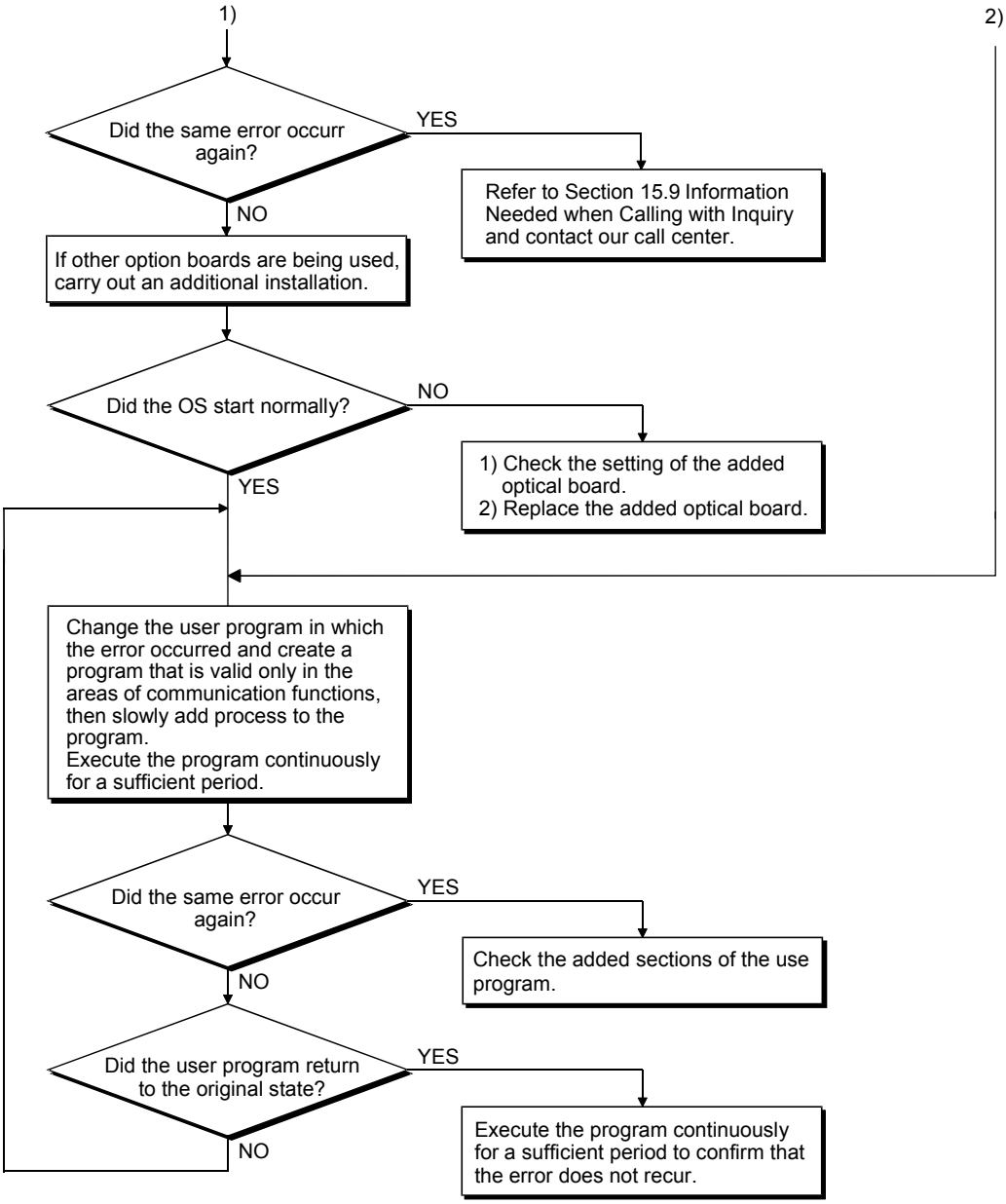

START
Is the communication function's return value abnormal?
YES
See Chapter 14, "Error Code".
NO
Monitor the device to be accessed from the device monitor utility.
Also, perform a data change to see if data can be written.
Can the device be monitored? (Was the data written?)
YES
Check the user program.
NO
Did an error occur?
YES
See Chapter 14, "Error Code".
NO
Was it host access?
YES
Check the MELSECNET/H board is overlapping with the system and other boards.
NO
Check according to the flowcharts in Section 15.4.

15.5.3 Flowchart to use when communication is disabled from time to time during user program execution


START
Did the user program return an error code?
YES
Confirm the definition of the error using the error code table in Chapter 14, and check the user program and access station.
NO
Start MNETH utility and check the each station status.
Is there any faulty station?
YES
Replace the link cable or faulty station.
NO
Set a system configuration that includes only the control station and host station.
Is the link normal?
NO
Replace the link cable or additional station connected.
YES
Add adjacent stations one after the other and perform link monitor for a sufficient period.

15.5.4 Flowchart to use when system reset or system hang-up occurred in Operating System


START
Remove all optical boards and restart the PC.
Did the OS start normally?
NO
YES
Is a MELSECNET/10 board being used?
YES
NO
In the case of Windows NT®, Workstation 4.0 is the OS starting in the VGA mode, and in the case of Windows® XP Professional, Windows® 2000 Professional, Windows® 98 and Windows® 95, is the OS starting in the Safe mode?
YES
NO
Set the address of the I/O port used by the MELSECNET/10 board in the driver settings in the MNETH utility.
Did the OS start normally?
YES
2)
Got to the next page.
NO
After formatting the HD, reinstall OS and each application software and start.
Did the OS start normally?
NO
Contact the PC, manufacturer.
YES
Load only the MELSECNET/H board and install the driver package.
Did the OS start normally?
NO
Check using the flowcharts in Section 15.3
YES
Chage the user program in which the error occurred and create a program that is valid only in the areas of Data Link functions. Execute the program continuously for a sufficient period.
1)
Gor to the next page.


1)
2)
Did the same error occurr again?
YES
Refer to Section 15.9 Information Needed when Calling with Inquiry and contact our call center.
NO
If other option boards are being used, carry out an additional installation.
Did the OS start normally?
NO
1) Check the setting of the added optical board.
2) Replace the added optical board.
YES
Change the user program in which the error occurred and create a program that is valid only in the areas of communication functions, then slowly add process to the program.
Execute the program continuously for a sufficient period.
Did the same error occur again?
YES
Check the added sections of the use program.
NO
Did the user program return to the original state?
YES
Execute the program continuously for a sufficient period to confirm that the error does not recur.
NO

15.5.5 Precautions for installing other optional board

Executing user programs (including the device monitor utility) for each board simultaneously under the following condition may cause an error.
When an error occurs in the user program, take the action shown below.

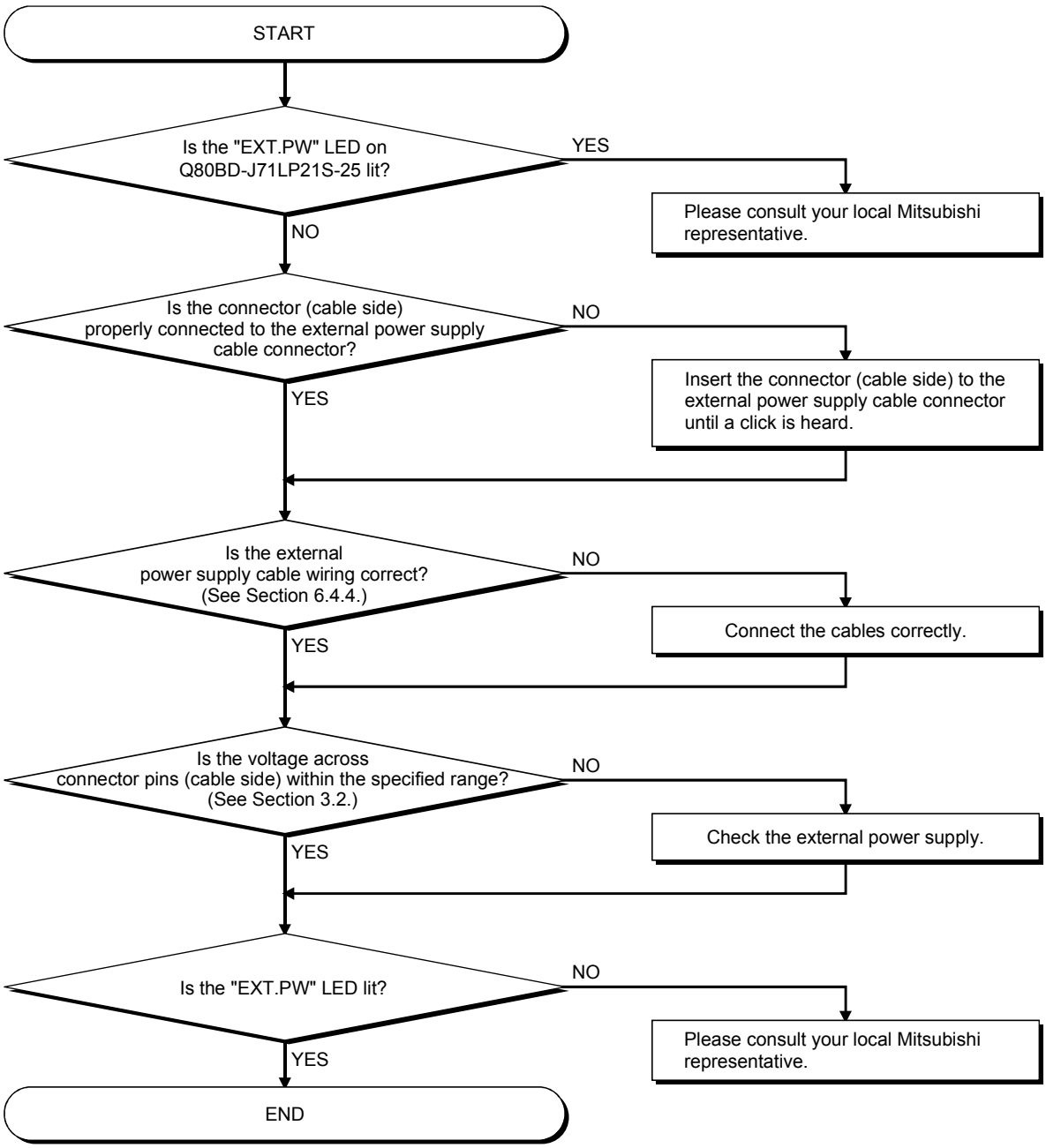
<Condition>

A personal computer into which the MELSECNET/H board and other optional board are installed and where the resources were allocated automatically by Plug-and-Play is used.

<Action>

(1) Change the positions where the MELSECNET/H board and other optional board are installed.
(2) In the BIOS setup, exchange the IRQs between the MELSECNET/H board and other optional board or change their IRQs.

15.6 When the Q80BD-J71LP21S-25's external power supply function does not work properly


START
Is the "EXT.PW" LED on Q80BD-J71LP21S-25 lit?
YES
Please consult your local Mitsubishi representative.
NO
Is the connector (cable side) properly connected to the external power supply cable connector?
NO
Insert the connector (cable side) to the external power supply cable connector until a click is heard.
YES
Is the external power supply cable wiring correct? (See Section 6.4.4.)
NO
Connect the cables correctly.
YES
Is the voltage across connector pins (cable side) within the specified range? (See Section 3.2.)
NO
Check the external power supply.
YES
Is the "EXT.PW" LED lit?
NO
Please consult your local Mitsubishi representative.
YES
END

15.7 Measures for WDT error occurrence

The following explains the causes of WDT error occurrence in MELSECNET/H board and measures for them.

(1) Cause of WDT error occurrence

The WDT error occurs in MELSECNET/H board as follows:

1) MELSECNET/H driver cannot operate because the PC or OS is hang up.
2) The CPU cannot start to control the MELSECNET/H driver within the WDT time, as the other drive has occupied the CPU processing.

(2) Corrective measures for WDT error

When the WDT error occurs, perform the following.

- Check the event viewer for a system error in the PC, and remove the error cause if identified.
- On the "Driver" screen of the MNETH utility software, adjust the Watch Dog Timer Monitoring Time Setting value.
  (For details, refer to Section 9.2.11 "Driver screen operation".)
- Reset the MELSECNET/H board, or restart the PC.
  (For resetting by the MNETH utility software, refer to Section 9.2.9 "Memory, I/O Test screen operation".)

15.8 Measures for Slow PC Operation

This section explains probable causes and corrective measures when a PC becomes slow.

(1) Possible causes for slow PC operation

The MELSECNET/H driver refreshes link device data assigned to another station from the refresh data storage area on the MELSECNET/H board to the MELSECNET/H drive buffer, and those assigned to the host station from the drive buffer to the refresh data storage area at specified intervals. *1
If more than one of the following causes occurs, the processing time for the above link refresh is increased in the total PC processing and causes slow operation:

- Too many link device points are set for the entire network.
- The link scan time value is too small.
- The computational power of the PC is low.

*1: It indicates the case where Link Refresh is selected in the Link Device Access Method setting on the MNETH utility's "Driver" screen.

(2) Corrective measures

When the PC becomes slow, perform the following:

- Increase the link refresh interval value on the MNETH utility's "Driver" screen.
- Set the constant link scan in Common parameter setting of the control station.
- Decrease the number of link device points in Common parameter setting of the control station.

15.9 Information Needed when Calling with Inquiry

The following conditions and status must be reported when calling us with an inquiry regarding a damaged board.

(1) Error state (be specific)
Example) The system does not start during the startup process after turning on the power, displaying a "board Not response" message.

(2) PC manufacturer, PC name/model

(3) OS name: Windows® XP Professional, Windows® 2000 Professional, or other

(4) Loading slot position

(5) Use of optional boards made by other companies

(6) If other companies' optional boards are used, provide us with the following information.
- Board model name and board manufacturer
- Memory address (head address and occupied size), I/O address (head address and occupied size) IRQ number, DMA number

(7) Whether or not the problem was checked with other PCs

APPENDIX

Appendix 1 Channel No. Assignment Method

This section explains the method for assigning a channel No. in the MELSECNET/H board.

POINT
(1) The number of boards that can be installed in one personal computer is 4 boards (Total number of both MELSECNET/10 boards and MELSECNET/H boards).
(2) Set the channel No. in the MELSECNET/H boards and MELSECNET/10 boards so that they do not overlap.

(1) If only the MELSECNET/H board is installed in a personal computer

(a) Automatic assignment of channel No.

The channel No. is automatically assign to MELSECNET/H boards installed in a personal computer in the order of the PCI slot No., from 51 to 54. Check your personal computer's manual concerning the order of the PCI slot numbers.

(b) User specified assignment method

In user specified assignment, the user changes the channel No. in the "Channel No. Setting" screen in the "Board List" screen of the MNETH utility. After the change, the set assignment in "Channel No. Setting" becomes valid.

App.

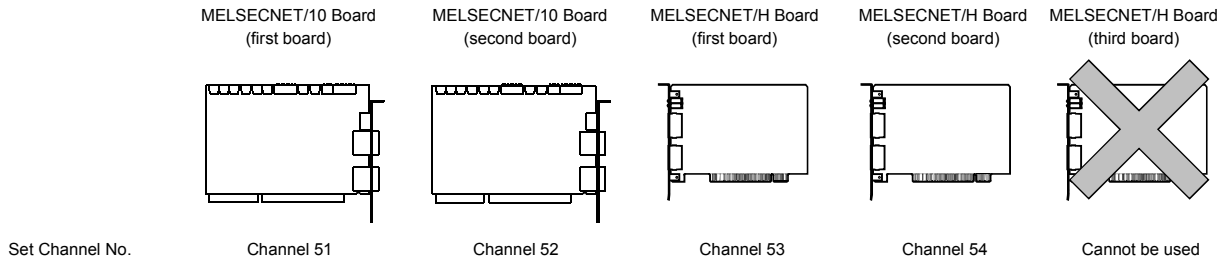
(2) If the MELSECNET/10 board is used in the personal computer

Select the following items used by the MELSECNET/10 board in the "Driver" (Combination setting with the MELSECNET/10 board), then restart the personal computer.

(a) The channel is used from channel 51 with the MELSECNET/10 board detected automatically and the channel of the remainder is used the MELSECNET/H board.

If the item "The channel is used from channel 51 with the MELSECNET/10 board detected automatically and the channel of the remainder is used the MELSECNET/H board." is selected, channel numbers are assigned on a priority basis from the MELSECNET/10 board installed in the personal computer.

(Note) If 2 MELSECNET/10 boards and 3 MELSECNET/H boards are installed in one personal computer, if this item is selected, the third MELSECNET/H board will become unusable as shown in the figure below, so exercise caution.



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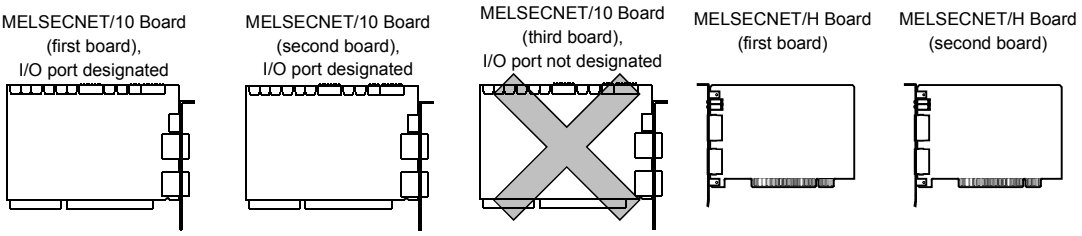
(b) The channel is used from 51 with the MELSECNET/10 board of specified I/O port and the channel of the remainder is used the MELSECNET/H board.

If the item " The channel is used from 51 with the MELSECNET/10 board of specified I/O port and the channel of the remainder is used the MELSECNET/H board." is selected, channel numbers are assigned on a priority basis from the MELSECNET/10 board designated by the I/O port. The channel numbers not used by the MELSECNET/10 board are used by the MELSECNET/H boards.

(Note) If 3 MELSECNET/10 boards and 2 MELSECNET/H boards are installed in one personal computer, if this item is selected, the MELSECNET/10 board not designated by an I/O port cannot be used, so exercise caution.


MELSECNET/10 Board (first board), I/O port designated
MELSECNET/10 Board (second board), I/O port designated
MELSECNET/10 Board (third board), I/O port not designated
MELSECNET/H Board (first board)
MELSECNET/H Board (second board)
Set Channel No.
Channel 51
Channel 52
Cannot be used.
Channel 53
Channel 54

REMARK

If the item "The channel is used from channel 51 with the MELSECNET/10 board detected automatically and the channel of the remainder is used the MELSECNET/H board." or " The channel is used from 51 with the MELSECNET/10 board of specified I/O port and the channel of the remainder is used the MELSECNET/H board." is selected, and MELSECNET/10 boards are used, MELSECNET/10 channel numbers are assigned in dual-port address order.

App.

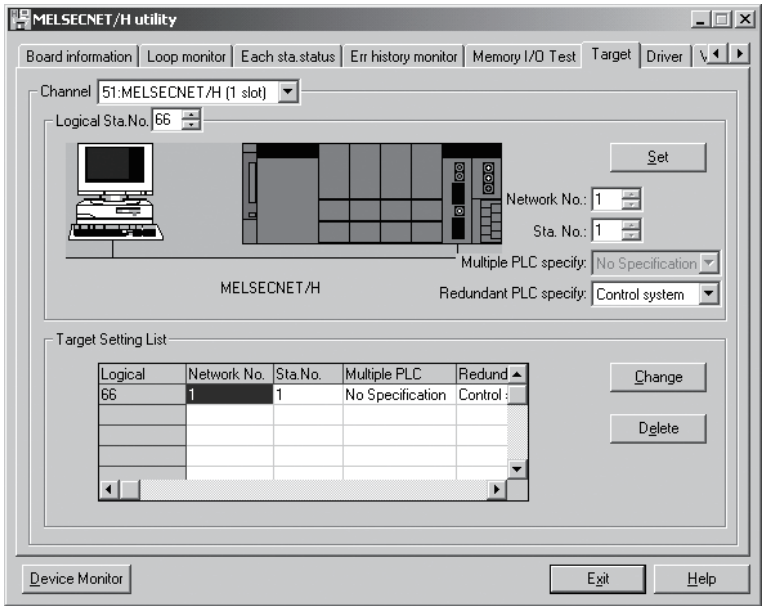
Appendix 2 Cautions for Accessing Redundant CPU System

This section explains the cautions for accessing a Redundant CPU system using the MELSECNET/H board.

Access to Redundant CPU system

(1) Redundant CPU specify

When the system (control system, standby system, System A, System B) of the Redundant CPU is specified to access the Redundant CPU, the Logical Sta. No. set on the "target" screen of the MELSECNET/H utility is used for access.
Refer to Section 9.2.10 for the setting of the Logical Sta. No.



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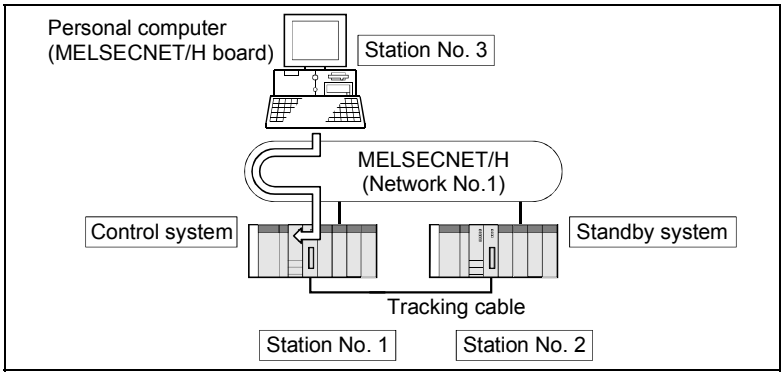
(2) Operation at occurrence of system switching

When system switching occurs during access to the Redundant CPU, access to the Redundant CPU set for the Logical Sta. No. is continued.

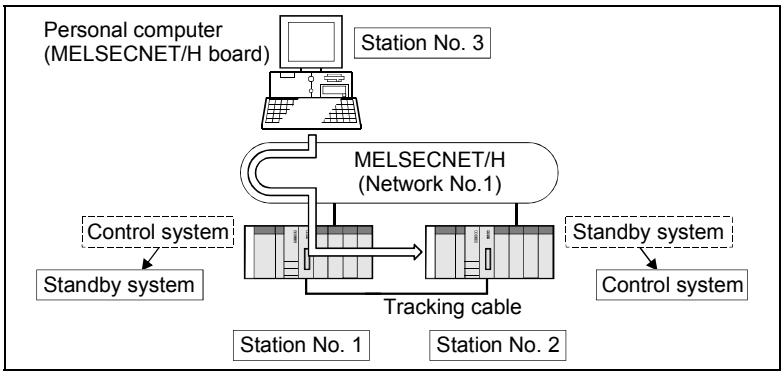
(Example) When the following Logical Sta. No.66 was specified for access Logical Sta. No.66

Network No.:	1
Sta. No.:	1
Multiple PLC specifiy:	No specification
Redundant PLC specify:	Control system

Before system switching



After system switching



POINT

To judge which system in the Redundant CPU system is being accessed by MELSECNET/H board, create a program to monitor the following special relays.

(1) When checking which system is being accessed, System A or System B

SM1511	System A identification flag	• Identifies system A/system B of a redundant system. • Remains ON/OFF even if the tracking cable is disconnected while the redundant system is running.
SM1512	System B identification flag	

	System A	System B	At the time of TRK.CABLE ERR.(Error code: 6120) occurrence (System not determined.)
SM1511	ON	OFF	OFF
SM1512	OFF	ON	OFF

(2) When checking the operation system status

SM1515	Control/ Standby system status	• Indicates the CPU module operation status • Remains ON/OFF even if the tracking cable is disconnected while the redundant system is running.
SM1516		

	Control system	Standby system	At the time of TRK.CABLE ERR.(Error code: 6120) occurrence (System not determined.)
SM1515	ON	OFF	OFF
SM1516	OFF	ON	OFF

(3) Retry processing for error that will occur during system switching processing

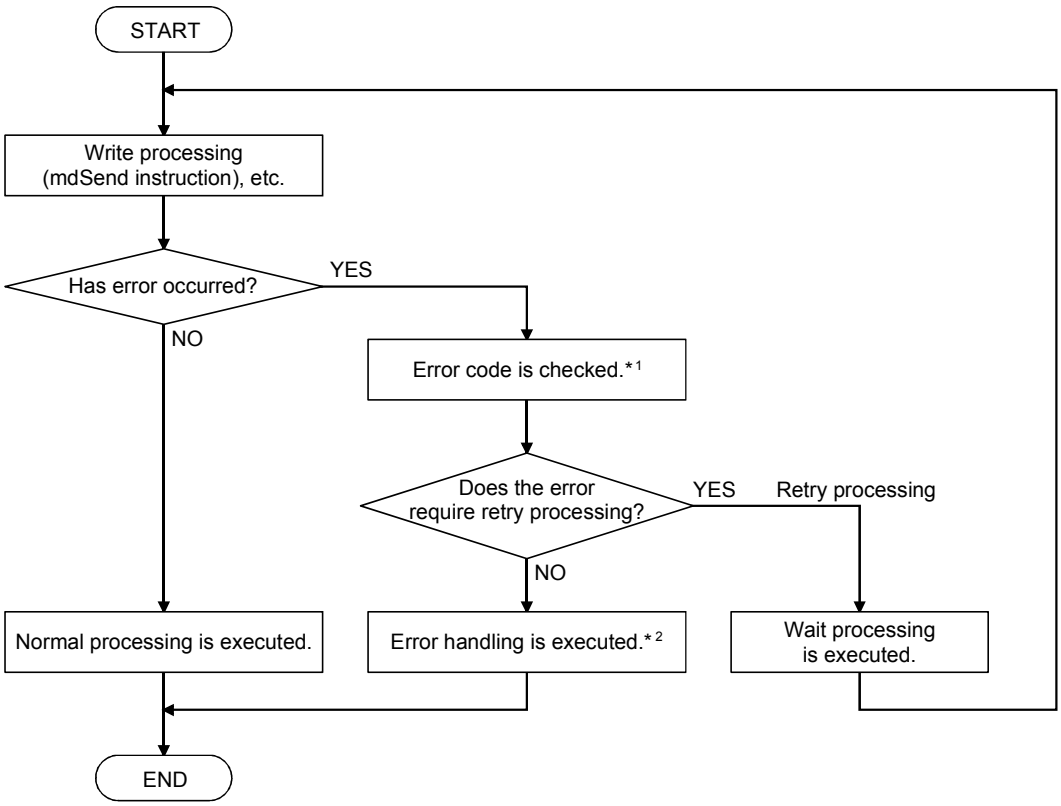
When the MELSEC data link library is used to access the Redundant CPU during system switching being processed by the Redundant CPU, a system switching error (error code 4248H), CPU starting error (error code 4004H), other system CPU module error (error code 4245H),access destination illegal error (error code FFDFH) or similar error occurs.

Create a program that will check the error code and perform retry processing as necessary in that case.

(a) The following indicates the functions that will result in error if executed during system switching.

	Functions that will result in error by system switching
MELSEC data link library	mdControl,mdDevRst,mdDevSet,mdRandR,mdRandW, mdReceive,mdSend,mdTypeRead

(b) The following example gives a flowchart for error occurrence at batch write.



*1: For the details and corrective action of the error code, refer to "Error code returned to request source during communication with CPU module" in the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

*2: Execute retry processing as required depending on the system specifications.

(4) Automatic switching of communication route

If a communication error occurs during access to the Redundant CPU connected to MELSECNET/H, the communication route is automatically switched to continue access to the control system.
Hereinafter, this automatic switching of the communication route is referred to as route switching.

The following describes the route switching conditions, how to check for route switching occurrence, and access to the control system by route switching.

(a) Route switching conditions

When access is being made under the following conditions, access to the Redundant CPU is continued by route switching if a communication error occurs.

	Conditions for continued access
Operation mode	Backup mode, Separate mode
Target system	Control system, Standby system, System A, System B

However, if a tracking error ∗1 had already occurred at a start of communication, access to the control system is not continued by route switching even if tracking is recovered after that.

∗1: Includes the status in which either Redundant CPU is powered off or reset.

(b) How to check whether route switching occurred or not and examples of access by route switching

1) How to check whether route switching occurred or not

When communication is being made in Target system, whether communication is continued by route switching due to communication error can be estimated.
Create a program that will monitor the following special relay and special registers.

<Special relay and special registers to be monitored and estimated possibility of route switching>

SM1600 ∗1	SD1590 ∗2	SD1690 ∗2	Possibility of route switching	Reference
OFF	Either one is other than 0		Since a system switching request from the network module was detected, route switching may have been executed.	2) Fig. 1
ON	0	0	Since an other system fault occurred, route switching may have been executed.	2) Fig. 2
ON	Either one is other than 0		Since an other system fault occurred or a system switching request from the network module was detected, route switching may have been executed.	2) Fig. 2 2) Fig. 1

∗1: Even if SM1600 is ON, route switching does not occur when the CPU is not accessed via the tracking cable.

∗2: When using SM1600, SD1590 and SD1690 to estimate whether route switching has occurred or not for the Redundant CPU connected to MELSECNET/H, check the following items in the redundant setting of the network parameter dialog box of GX Developer.
- Issue a system switching request at disconnection detection.
- Issue a system switching request at communication error.

Check the following based on the statuses of the above special relay and special registers, and remove the error cause.
- Check the Redundant CPU for an error.
- Check the tracking cable status and whether the tracking cable is correctly connected.
- Check the relevant network module for an error and the network where the relevant network module is connected for an error.

2) Examples of access by route switching

The following shows examples of route switching during access to the control system.

<When system switching occurs at communication error>

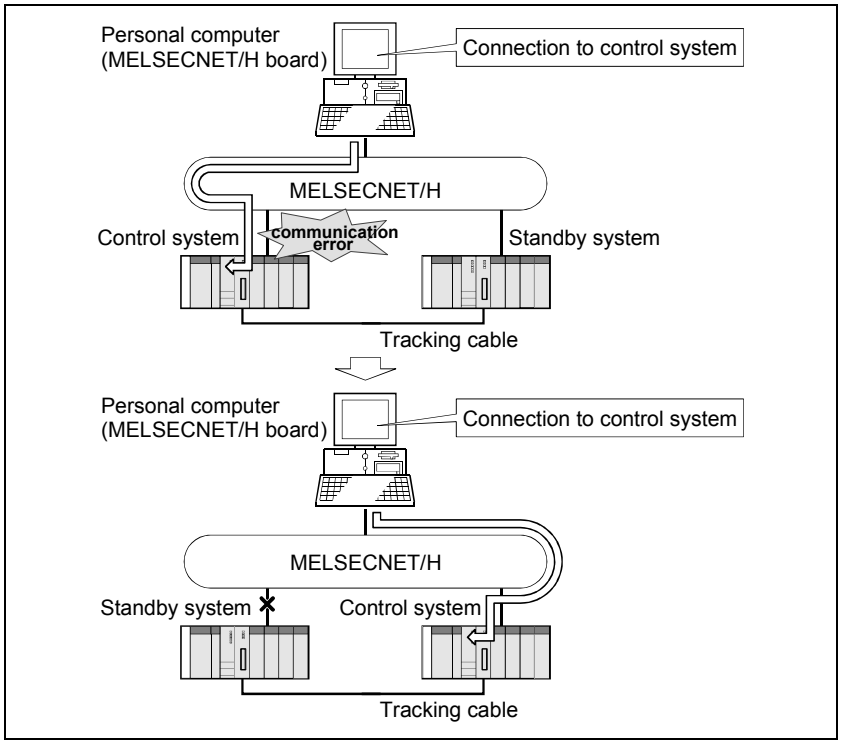


Fig. 1 Route switching example 1

<When standby system fault occurs>

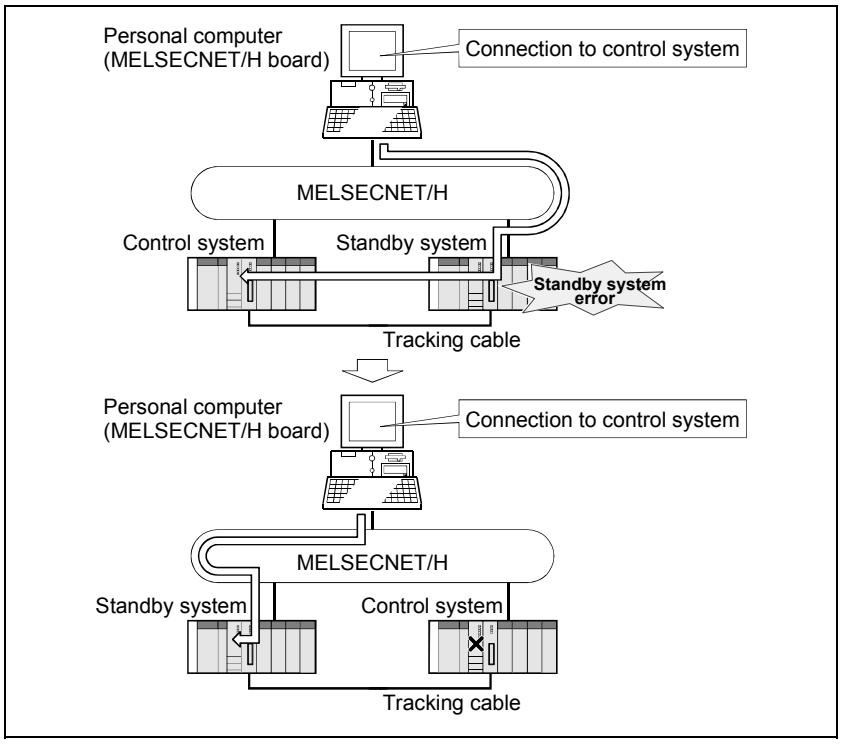


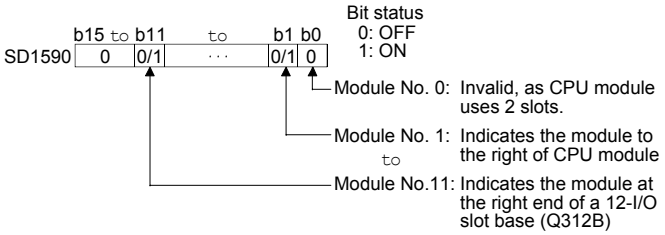
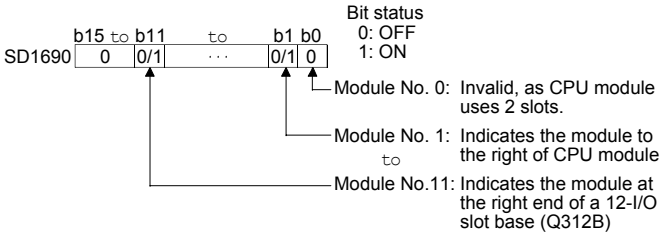
Fig. 2 Route switching example 2

POINT

- Route switching is not executed if a communication error has already occurred at a communication start*1 for the Redundant CPU specified for the Logical Sta. No. (A communication error occurs.)
  If a communication error has occurred, refer to (b) in (4) Automatic switching of communication route, and remove the communication disturbance.
  *1: First communication after execution of the mdOpen function in the MELSEC data link library (communication using the mdReceive, mdSend, mdControl, mdDevRst, mdDevSet, mdRandR, mdRandW or mdTypeRead function).
- If other station access (including the programmable controller CPU other than the Redundant CPU) is made to nine or more stations simultaneously, automatic switching of communication route may not be executed.

REMARK

The following indicates details of the special relay and special registers to be monitored when estimating whether route switching occurred or not.

Number	Name	Meaning	Explanation
SM1600	Other system error flag	OFF: No error ON: Error	• Turns on when an error occurs during redundant system error check. (Turns on when either of bits for SD1600.) • Remains off when no errors are present.
SD1590	Module No. for network module requesting route switching in host system	Module No. for network module requesting route switching in host system	• Any of the following bits turns on corresponding to module No. for network module requesting route switching in host system. • Turns off by the system after recovery from error of the relevant module by user.  • Refer to SD1690 for module No. for network module requesting route switching in other system.
SD1690	Module No. for network module requesting route switching in other system	Module No. for network module requesting route switching in other system	• Any of the following bits turns on corresponding to module No. for network module requesting route switching in other system. • Turns off by the system after recovery from error of the relevant module by user.  • Refer to SD1590 for module No. for network module requesting route switching in host system.

Appendix 3 Host station status at power ON/OFF when using the Q80BD-J71LP21S-25

When using the Q80BD-J71LP21S-25, the host station status varies depending on the ON/OFF status of the external power supply and personal computer as shown below.

(1) When the system is started

No.	Status	External power supply	PC power	Host station status		
				Loop status ＊1	Communication status ＊2	Data link ＊3
1	External power supply OFF before ON	OFF	OFF	Loopback occurred	Abnormal (Disconnected)	Not executed
2	External power supply ON before PC startup (power-ON)	ON	OFF	Normal	Abnormal (Disconnected)	Not executed
3	PC startup (power-ON) before MELSECNET/H driver startup	ON	ON			
4	After MELSECNET/H driver startup	ON	ON	Normal	Normal communication	Executed

(2) When the personal computer is started

No.	Status	External power supply	PC power	Host station status		
				Loop status ＊1	Communication status ＊2	Data link ＊3
5 ＊4	PC power OFF before PC startup (power-ON)	ON	OFF	Normal	Normal communication	Not executed
6	PC power startup (power-ON or restart) before MELSECNET/H driver startup	ON	ON	Normal	Abnormal (Disconnected)	Not executed
7	After MELSECNET/H driver startup	ON	ON	Normal	Normal communication	Executed

(3) When the system is shut down

No.	Status	External power supply	PC power	Host station status		
				Loop status ＊1	Communication status ＊2	Data link ＊3
8	PC power OFF before external power supply OFF	ON	OFF	Normal	Normal communication	Not executed
9	External power supply OFF	OFF	OFF	Loopback occurred	Abnormal (Disconnected)	Not executed

＊1: The status can be checked on the network monitor screen of the MELSECNET/H utility, the Network diagnostics of GX Developer connected to other station's PLC or at areas SW91 to SW9A.

＊2: The status can be checked on each station status screen of the MELSECNET/H utility, the Network diagnostics of GX Developer connected to other station's PLC or at areas SW70 to SW73.

＊3: The status can be checked on the Network diagnostics of GX Developer connected to other station's PLC or at areas SW74 to SW77.

＊4: This status is irrelevant when rebooting the personal computer without turning off its power.

Appendix 4 Warning Message Appears on Windows Vista®

Appendix 4.1 Overview of warning message

As a user account control function has been added to Windows Vista® , a warning message appears when you run the MELSECNET/H utility or the Device monitor utility.

Appendix 4.2 Methods for preventing the warning message

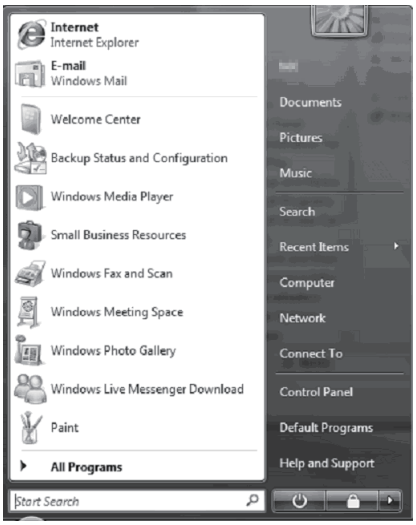
POINT

The user account control (UAC) function prevents a crash (e.g. prevention of start-up of a program which executes unintended operation).
Before setting this function, grasp that the security function offered by UAC will be disabled and fully understand the risk.

The following two methods are available for preventing a warning message.

(1) Disabling the user account control function

The following shows a procedure for disabling the user account control function.



↓

1) Select [Start] – [Control Panel].

↓

2) Select [User Accounts].

↓

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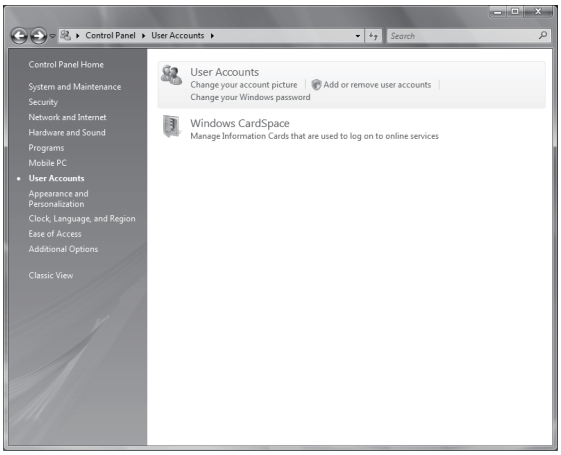
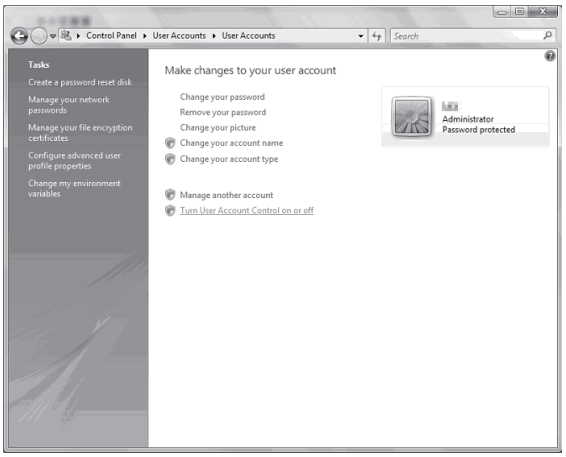


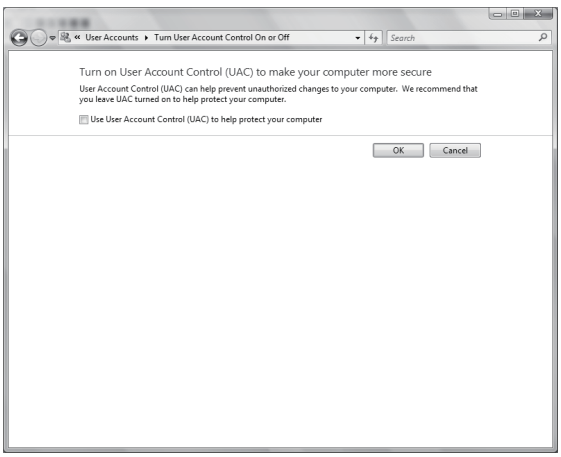
3) Select [User Accounts].

↓



4) Select [Turn User Account Control on or off].

↓


User Accounts ▸ Turn User Account Control On or Off ▸
Search
Turn on User Account Control (UAC) to make your computer more secure
User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.
Use User Account Control (UAC) to help protect your computer
OK
Cancel

5) Deselect [Turn on User Account Control (UAC) to make your computer more secure].

↓

(Setting completion)

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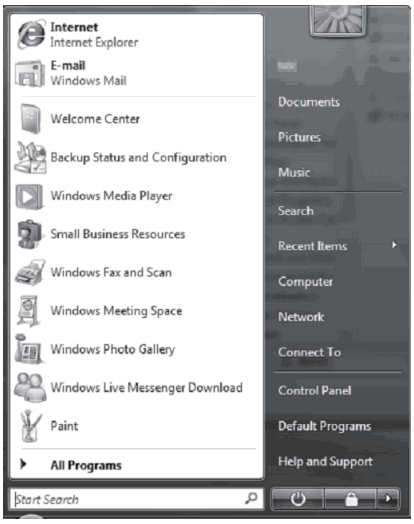
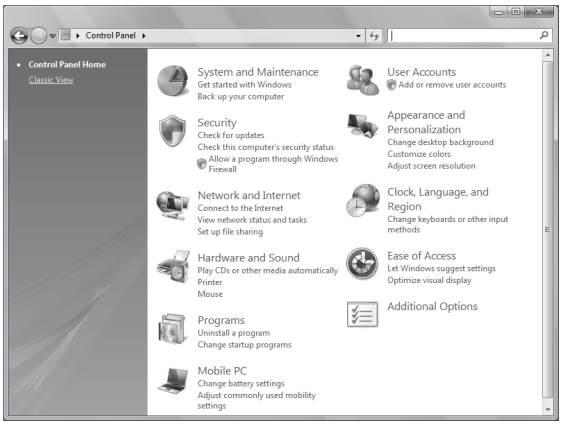
(2) Allowing the warning message without showing it

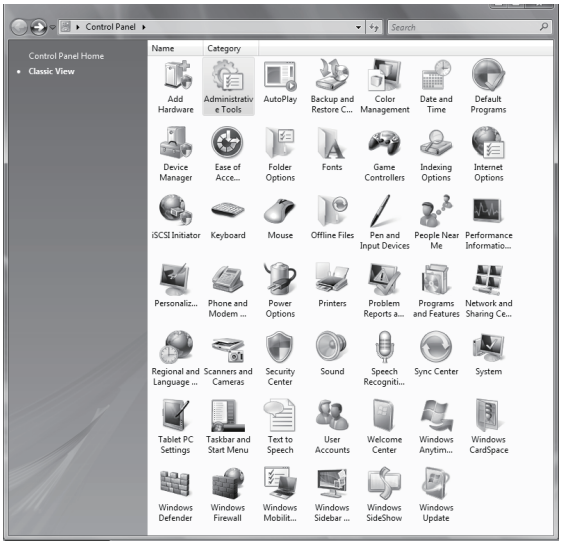
The following shows a procedure for allowing a warning message without showing it.



1) Select [Start] – [Control Panel].



2) Select [Classic View].



3) Select [Administrative Tools].

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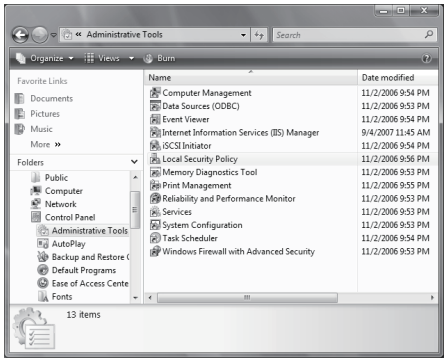

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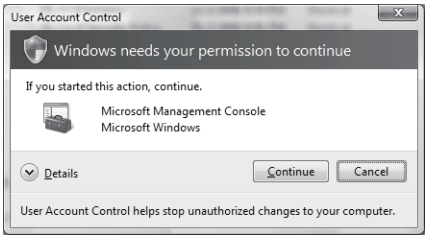
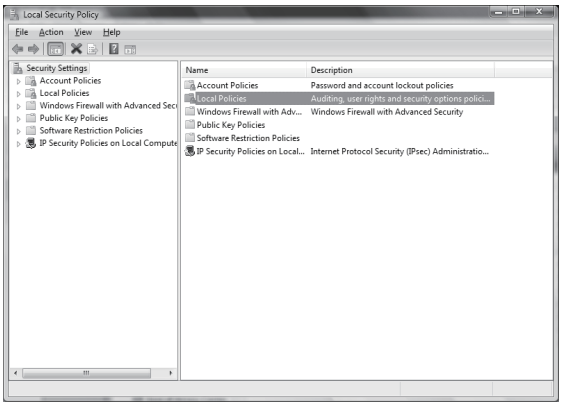
4) Select [Local Security Policy].

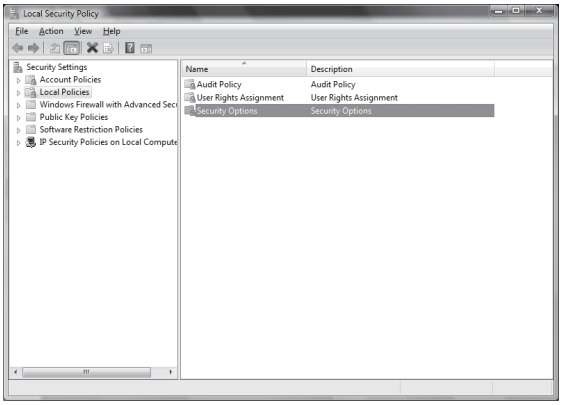
* When user account control is enabled in Windows Vista® , the following screen appears.
Click the Continue button.




Local Security Policy
File Action View Help
Security Settings
Account Policies
Local Policies
Windows Firewall with Advanced Sec
Public Key Policies
Software Restriction Policies
IP Security Policies on Local Compute
Name
Description
Account Policies Password and account lockout policies
Local Policies Auditing, user rights and security options polici...
Windows Firewall with Adv... Windows Firewall with Advanced Security
Public Key Policies
Software Restriction Policies
IP Security Policies on Local... Internet Protocol Security (IPsec) Administratio...

5) Select [Local Policies].

↓



6) Select [Security Options].

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(From preceding page)

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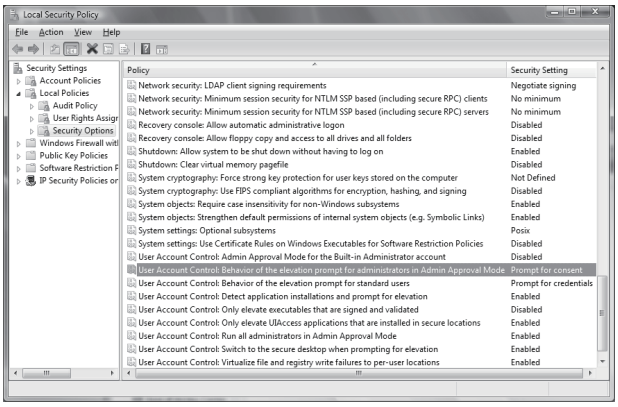
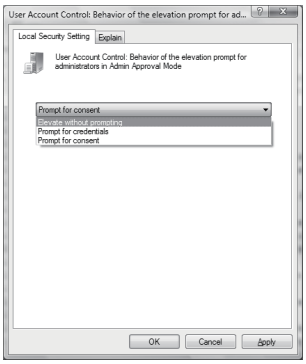

Local Security Policy
File Action View Help
Security Settings
Account Policies
Local Policies
Audit Policy
User Rights Assign
Security Options
Windows Firewall with
Public Key Policies
Software Restriction P
IP Security Policies on
Policy
Security Setting
Network security: LDAP client signing requirements
Negotiate signing
Network security: Minimum session security for NTLM SSP based (including secure RPC) clients
No minimum
Network security: Minimum session security for NTLM SSP based (including secure RPC) servers
No minimum
Recovery console: Allow automatic administrative logon
Disabled
Recovery console: Allow floppy copy and access to all drives and all folders
Disabled
Shutdown: Allow system to be shut down without having to log on
Enabled
Shutdown: Clear virtual memory pagefile
Disabled
System cryptography: Force strong key protection for user keys stored on the computer
Not Defined
System cryptography: Use FIPS compliant algorithms for encryption, hashing, and signing
Disabled
System objects: Require case insensitivity for non-Windows subsystems
Enabled
System objects: Strengthen default permissions of internal system objects (e.g. Symbolic Links)
Enabled
System settings: Optional subsystems
Posix
System settings: Use Certificate Rules on Windows Executables for Software Restriction Policies
Disabled
User Account Control: Admin Approval Mode for the Built-in Administrator account
Disabled
User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode
Prompt for consent
User Account Control: Behavior of the elevation prompt for standard users
Prompt for credentials
User Account Control: Detect application installations and prompt for elevation
Enabled
User Account Control: Only elevate executables that are signed and validated
Disabled
User Account Control: Only elevate UIAccess applications that are installed in secure locations
Enabled
User Account Control: Run all administrators in Admin Approval Mode
Enabled
User Account Control: Switch to the secure desktop when prompting for elevation
Enabled
User Account Control: Virtualize file and registry write failures to per-user locations
Enabled

↓



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(Setting completion)

7) Select [User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode Prompt for consent].

8) Select [Elevate without prompting] on the <<Local Security Setting>> tab, and click the OK button.

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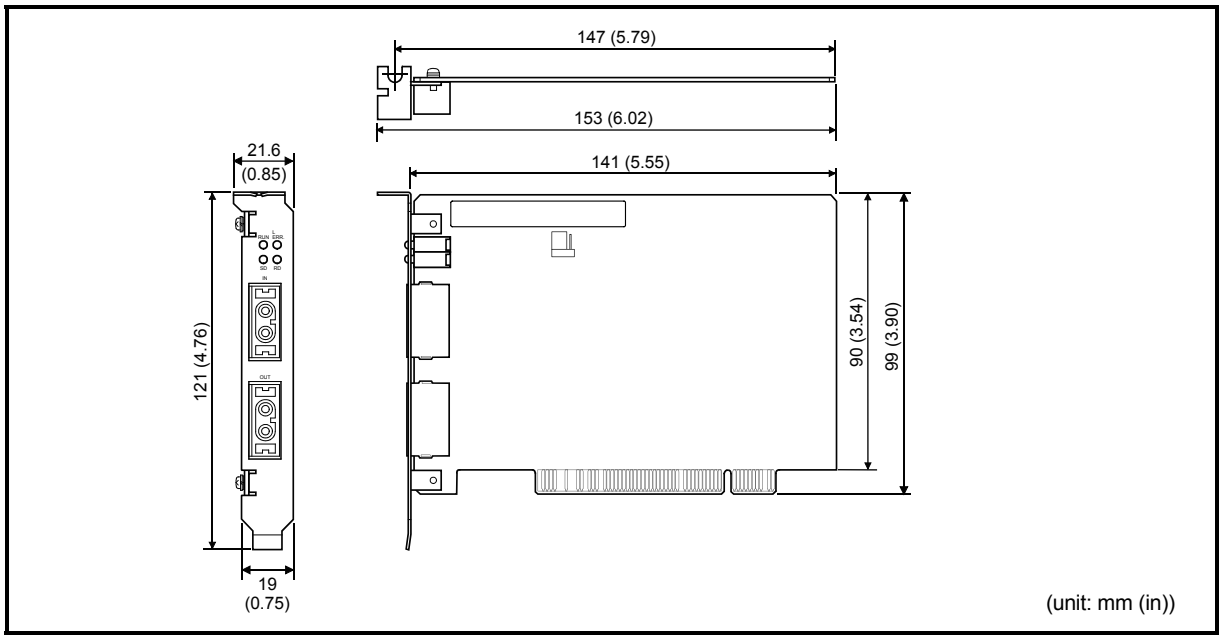
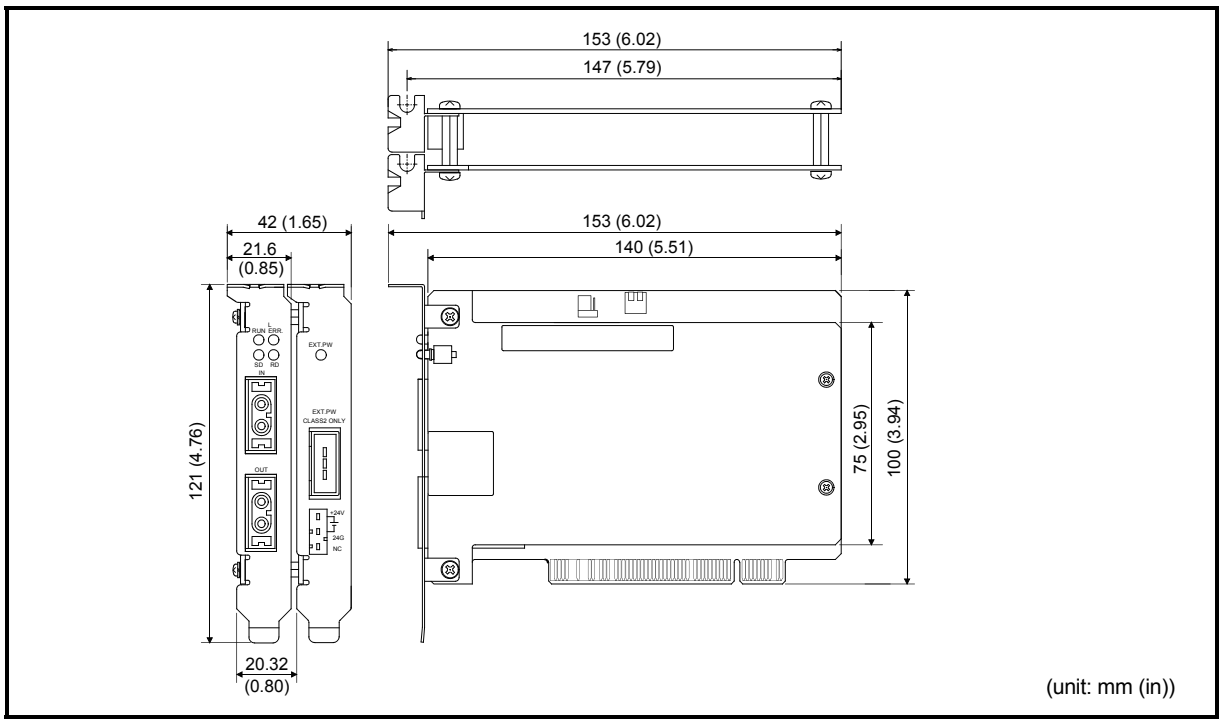
Appendix 5 External Dimensions

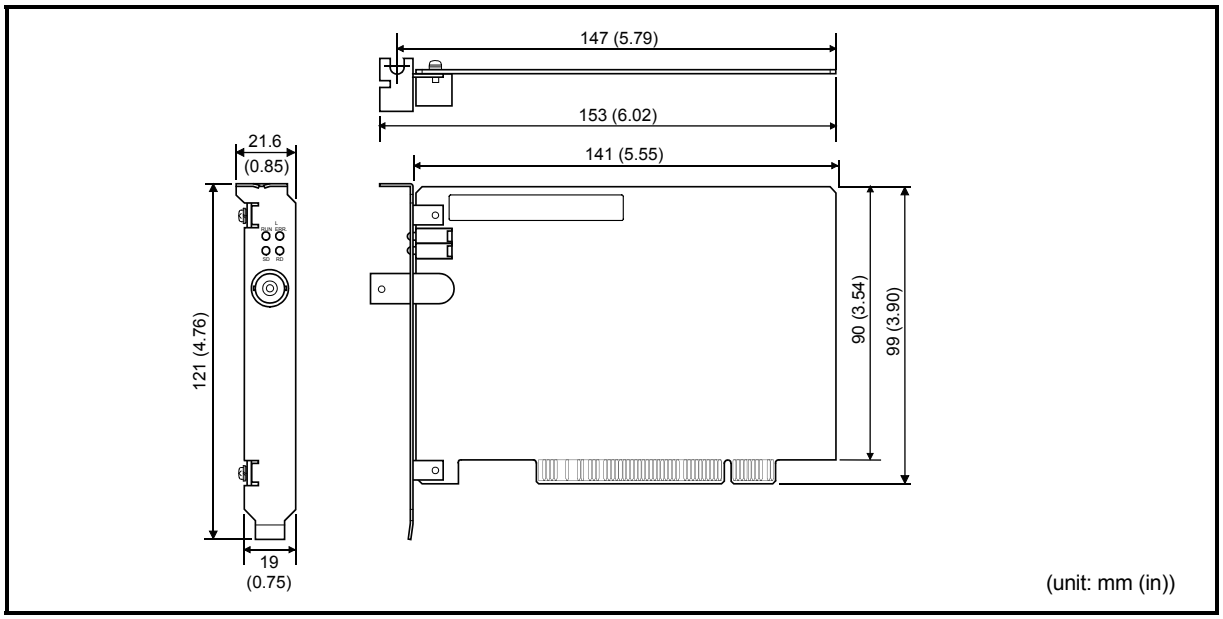
Appendix 5.1 Q80BD-J71LP21-25, Q80BD-J71LP21G, Q80BD-J71LP21GE



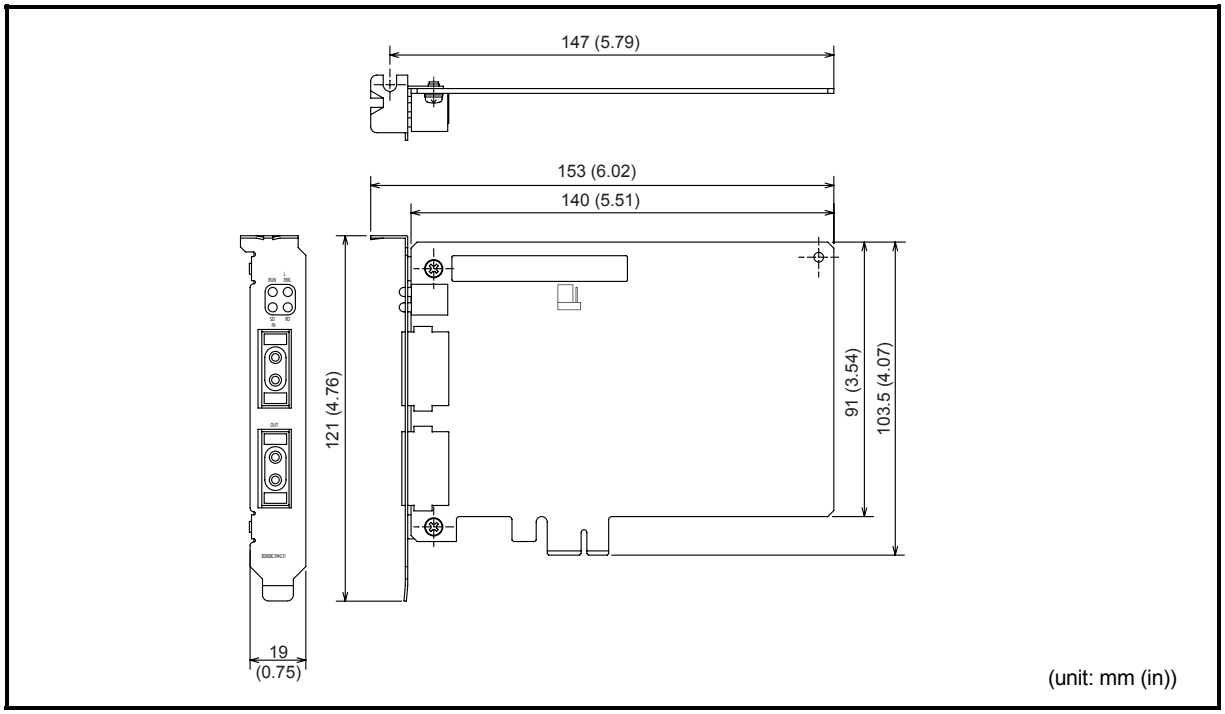
Appendix 5.2 Q80BD-J71LP21S-25



Appendix 5.3 Q80BD-J71BR11



Appendix 5.4 Q81BD-J71LP21-25



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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for three years after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be (42) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
(2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

MELSECNET/H Interface Board

User's Manual (For SW0DNC-MNETH-B)

MODEL	SW0-MNETH-B-U-E
MODEL CODE	13JR24
SH(NA)-080128-P(0810)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.